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A Podcast and Website for Informal Educators and How It Can Disseminate Best Teaching Practices

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**A Podcast and Website for Informal Educators and How It Can Disseminate Best
Teaching Practices**

by

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A capstone submitted in partial fulfillment of the requirements for the degree of
Master of Arts in Education: Natural Science and Environmental Education

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CHAPTER ONE

Introduction

Overview

Elementary school teachers usually love field trips to museums, cultural sites, and science centers. Often, though, they find that the goals of the informal educators who mediate those experiences do not match class goals. Moreover, although some informal educators are well-trained and experienced, many lack class management and content delivery skills (Collins, 2003, p. 22; NSTA, 2012; Wojton, 2013).

Informal educators strive to provide high-quality learning experiences to students visiting their sites. Facilities provide professional development to their educators, but frequently this consists of content knowledge, not teaching practices. Moreover, informal environments are so unusual and varied that educators cannot simply adapt classroom techniques; each situation requires a unique pedagogy.

Teachers can improve their practice through membership in professional learning communities (Kirschner & Lai, 2007; Wenger, 2008). That presents a challenge for informal educators, who frequently have little direct contact with their colleagues. At each site, there may be only one or a few such teachers; additionally, a niche facility like a natural history museum might be the only institution of its type in its region. Therefore, I have embarked on a project to address the question *How can online tools be used to disseminate best teaching practices among informal educators?*

Chapter Plan

In this chapter, I will describe my career as it progressed from informal science educator to classroom teacher, since that professional journey grounds my opinion that

informal educators should share their knowledge and techniques across institutions. Next, I will provide a rationale for using online tools to build such a community. Finally, I will propose a project to create a linked podcast, electronic newsletter, and website as a resource for informal educators to share their best practices.

Project Rationale

Elementary school teachers often enjoy utilizing outdoor field trips. Taking students to a cultural history site or science museum supports curricular goals while breaking up the school day routine. Such an immersion in science or culture serves as enrichment, class reward, and team building rolled into one. Many teachers consider these experiences highlights of the school year and many students recall their outdoor education and other off-campus trips well into adulthood (Collins, 2003, p. 22; Muse et al., 1982; NSTA, 2012; Tal, et al., 2014; Wojton, 2013).

Several factors attenuate the value of field trips, however, from time constraints to the difficulty in connecting informal learning to a standards-based curriculum (Michie, 1998; Tran, 2007). Even when the classroom teacher overcomes those hurdles, one variable remains outside the teacher's power to change: the knowledge and teaching skill of the informal educator who conducts the experience. In many cases, a site-specific naturalist, guide, or docent mediates the excursions. Although these allied educators have a good command over accurate information, they often lack pedagogical technique, which degrades the value of the interaction (NSTA, 2012; Tran, 2008; Tran & Halverson, 2021).

Informal educators accept a complex mission. First, they must mediate a woefully short program, often spending as little as one hour with each class. In some settings, their

programs make physical and mental demands on participants unfamiliar with wilderness or museums. Moreover, audiences are diverse; an educator who teaches inner-city kindergartners in the morning might work with suburban high school students the same afternoon. Finally, in outdoor settings, severe weather or one day's inexplicable absence of endemic wildlife can spoil the teaching site. The task of a site-specific informal educator is formidable (Fenichel et al., 2010; NSTA, 2012; Tran & Halverson, 2021).

In addition, the informal educator frequently lacks professional development opportunities (NSTA, 2012; Tran et al., 2013). Although facilities such as zoos and museums provide their staff and volunteers with high-quality content knowledge, they might lack the time or expertise to focus on the teaching craft. Thus, informal educators can lack exposure to such critical topics as class management, child development, and social-emotional learning. They may gain experience through trial and error over many years, but only haphazardly. As a result, new informal educators, or experienced but untrained ones, lack the skills to provide students with an optimal educational experience. Indeed, many leave the field to pursue opportunities where they can obtain more professional development (Tran et al., 2013, p. 334).

One final challenge for the informal educator is isolation. The teaching setting, whether an aquarium, historical monument, or forest trail, is generally located apart from similar facilities. Even within one institution, educators may lack opportunities to collaborate as they often work separated by distance or time from their colleagues. These practical difficulties complicate the formation of a professional community.

For teachers at general education schools, there are opportunities to connect with colleagues both on campus and, usually, at similar schools nearby. Sometimes,

administrators formalize these connections into professional learning networks (PLNs). Even where there is no formal PLN, workplaces with employees doing similar jobs holistically generate informal coalitions known as *communities of practice* (Keane, 2020). Communities of practice occur in factories, offices, and supermarkets; they organically facilitate idea exchange among the laborers, administrators, and cashiers who work in each setting (Wenger, 2004; Wenger, 2008). Teachers within a school frequently generate their own communities of practice (Zhang et al., 2017). For informal educators, though, the aforementioned isolation limits their access to such communities.

In the modern climate of connectivity, however, educators need not limit themselves to face-to-face forms of community. Online tools such as podcasts, electronic newsletters, and websites provide people from different areas and times to share best practices asynchronously and thereby build a community of practice (Kirschner & Lai, 2007; Zumach & Portillo, 2020). Those tools' power is the final rationale for this project to answer the question *How can online tools be used to disseminate best teaching practices among informal educators?*

Project Context: My Journey

I joined the informal education field in 1991 with the title *volunteer highlight docent*. Every weekend, I led one-hour tours at the California Academy of Sciences in San Francisco. Before I was unleashed on the paying public, I received three months of extensive training. Every week, curator-scientists delivered comprehensive lectures on the museum's exhibits; we covered geology, regional wildlife, evolution, astronomy, and given our proximity to the San Andreas Fault, earthquakes.

Until the last day, the training exclusively concerned science facts: what to teach, not *how* to teach. During that final session, we received a list of cautions about such matters as not gesturing with any single finger, a taboo in many cultures. We also practiced walking safely, backwards, up and down staircases. But that hour of teaching tips included nothing of pedagogy, of how to engage our learners. A docent's expected delivery was unidirectional: the educator talks, the tour group follows and listens.

Shortly thereafter, I took on another position at a marine mammal rescue hospital. As a marine science instructor, I presented to groups of elementary-aged students for one hour at a time. At this facility we were trained to involve the classes actively rather than simply reciting facts. We did tube-feeding demonstrations on one lucky student from each group, we passed around pelts and skulls, and instead of answering every question, I asked some.

Significantly, I learned the art of reflecting questions. Rather than giving a scientist's answers for phenomena like an elephant seal's boisterous vocalizations or a whale's enormous size, I guided children to think critically about the animals' natural history and arrive at their own reasonable explanations. These programs were pedagogically sound, but because they were still quite short, my work still primarily consisted of information delivery.

Outdoor education is seasonal work, so to fill in my quiet summers, in 2003 I took on another job teaching summer camp day programs for San Francisco public school children. Our program was grant-funded and free, so groups typically came from low-income areas and students had little experience visiting natural sites. Therefore, we

focused on adventures: we hiked to egret nesting sites, kayaked to seal haul-out beaches, and visited tide pools along the coast.

Our time with these students was generous – an entire week with each group – so we educators incorporated more than simple information transfer: we started using the students as teachers themselves. Classroom teachers regularly employ partner work and student presentations, but for an outdoor educator like me, such techniques were a revelation. I discovered structures wherein the naturalist would teach one student a fact, but then that student took ownership of the knowledge and passed it on to the remaining students. Round-robin techniques increased student voice in my programs as well as engagement and retention.

Even more significantly, student-centered structures addressed learning and language differences. When a student explained a concept like weathering to a classmate with emergent English, they employed not only information retrieval but also the speaking skill of circumlocution – how to convey meaning while hunting for words your conversation partner understands. It was heartening to facilitate such an inclusive instructional model and encouraging to witness that it succeeded.

Finally, around this time, the local council of American Youth Hostels hired me to lead three-day overnight trips. This was another grant-funded program, so again our groups were typically both low-income and unused to the wilderness. Students stayed in a wilderness youth hostel and explored the nearby national park for three days, with me as one of their guides.

In that remote setting, though, something new emerged: emotions. Rather than mastering any ecological concept, these students frequently forged an *affective*

connection to the experience. Many had never in their lives slept away from their homes nor walked through a forest — or, indeed, outdoors at all — in the nighttime. They had never been immersed in a soundscape that humans had no part in creating. We naturalists found that this experience required more than teaching local wildlife lore, and so we began to add into our programs private, contemplative time. Students produced art and poetry, kept a feelings journal, and spent time in self-reflection. In short, while we were learning, we would sometimes stop and listen, too.

Stopping and listening: that phrase sums up my journey as an outdoor educator. From my beginnings — talking nonstop for an hour while walking backwards — I gleaned new strategies at every phase of my career. I incorporated demonstrations, critical thinking questions, peer instruction, and team building into my teaching. In the end, I developed my ideal personal model for teaching in informal settings: a balance of knowledge transfer against a background of self-discovery. Around that time, I began to receive training as a classroom teacher, and discovered to my astonishment that these pedagogical techniques had already been discovered and validated. That surprise made me eager to find a way that the skills and learnings of classroom teachers could enrich the practice of informal education.

Conclusion

In this introduction, I established the fundamental rationale for examining this question: *How can online tools be used to disseminate best teaching practices among informal educators?* Then I described the professional context that led me to that question and choice of project. In Chapter Two, I will review existing literature around informal education in general and the training of informal science educators in particular.

I will explore research into the concept of best practices and how an online community of practice for informal educators supports improvements in practice. Then, in Chapter Three, I will describe the project I undertook to create a podcast, website, and electronic newsletter to facilitate such a community of practice. Finally, I will describe the results of the project in Chapter Four and reflect on my learning during the capstone process.

CHAPTER TWO

Literature Review

This project proposes to undertake and electronically disseminate conversations with experienced informal educators. It should first be established that such conversations would be of professional and personal value to the practitioners themselves.

To the layperson, education occurs when a teacher presents academic material within a classroom. This simple picture omits the learner's social context, however, which social psychologists have shown to mediate the construction of new knowledge. In professional settings, teachers engage in social learning through various mechanisms such as peer coaching and professional networks. Jointly, these formal and informal arrangements are termed *communities of practice* (Wenger, 2008). The first section of this chapter examines the literature behind how such communities of practice (CoP) facilitate professional learning for teachers. It will focus especially on how an online dissemination tool can play a role in CoPs, this to address the research question at this project's heart: *How can online tools be used to disseminate best teaching practices among informal educators?*

After exploring the community of practice surrounding informal educators, the remainder of this chapter will examine research on the types of material that community should disseminate. Informal educators often teach in high-interest settings that create a sense of excitement, curiosity, and fun within learners, prompting them to openness toward accepting new knowledge. Therefore, the second section of this chapter explores of the literature around *affective learning*, with particular reference to out-of-school environments.

Once students have engaged affectively, informal educators must study the diversity of their students. Educators should master the complex, intersectional interplay between learners' sociocultural, personal, and physical contexts to effectively make meaning from the experience. In museum education, this interaction has been called the context model of learning (Falk et al., 2012); the third section of this chapter reviews the literature exploring this paradigm.

Finally, although affective experiences and the context model of learning provide a theoretical frame for informal educators, they also find themselves in need of practical, widely applicable techniques. Many practitioners call such techniques *best practices*, but the term itself is rarely interrogated. Thus, the last area of review within this chapter is scholarly work from the field of public policy that illustrates best practices research. The section closes with certain specific best practices in informal education, such as dialogic discourse.

By examining research findings and academic frameworks around communities of practice, affective learning, the context model of education, and best practices in teaching, this review will provide theoretical groundwork to address the project research question: *How can online tools be used to disseminate best teaching practices among informal educators?*

Peer Learning and Communities of Practice

Learning, although perceived as a primarily cognitive activity, also contains rich social aspects, theorists have discovered. To these educational psychologists, learning is not simply a set of neurological changes driven by rote memorization. Rather, it is “a more encompassing process of being active participants in the *practices* of social

communities and constructing *identities* in relation to these communities” (Wenger, 2008, p. 4). Learners internalize new knowledge not by mere immersion in static material but by means of discourse about the material. To human learners, the social context in which we learn is equal in importance to the material itself. As Vygotsky wrote (as cited by Wertsch, 1985), “the social dimension of consciousness is primary in time and fact” (p. 58). Among the members of a job category like doctors, factory workers, or teachers, Wenger (2008) termed the phenomenon of intragroup learning a *community of practice*.

Communities of practice (CoP) are not formal organizations, but relationship networks that develop organically among people occupied with similar activities, such as members of a profession. These communities “develop their own practices, routines, rituals, artifacts, symbols, conventions, stories, and histories” (Wenger, 2008, p. 5). Engagement in a CoP is the context in which professionals continue to learn, even after they consider their learning to be complete:

One reason they do not think of their job as learning is that what they learn is their practice. Learning is not reified as an extraneous goal or as a special category of activity or membership. Their practice is not merely a context for learning something else. Engagement in practice—in its unfolding, multidimensional complexity—is both the stage and the object, the road and the destination. (Wenger, 2008, p. 95)

Communities of practice, then, are the environments in which occupational learning takes place.

In some cases, these communities of practice can be formally constituted. Many professions’ certification processes require newcomers to learn from more experienced

colleagues, as with the institutions of medical residency and mentor teachers. Noting the latter exception, formal professional learning after initial teacher onboarding either does not exist or is delivered within asocial conference hall sessions or online classes (Diaz-Maggioli, 2004, p. 3; Elias, 2009; Papay et al., 2016, p. 30). Sockett, et al. (2001) characterized this mechanistic mode of professional development as corrosive to teacher autonomy, devolving to “short in-service programs that instruct teachers in the latest fad” (p. 12). Individualized, socially mediated peer learning is deemphasized in most professional teachers’ careers.

Within the teaching profession, investigators have considered several different modalities of social learning. These include three approaches which may bear upon this project’s aim to disseminate the expertise of informal educators: spillover learning (Clarke & Hollingsworth, 2002; Jackson & Bruegmann, 2009), peer coaching (Thomson, 2015; Zhang et al., 2017), and professional learning networks (Bolam et al., 2005; Keane, 2020; Meeks, 2013; Mielke, 2015). This section considers research findings about those three approaches within a teacher’s community of practice.

Spillover Learning

Jackson and Bruegmann (2009) named one aspect of peer-to-peer learning among teachers *spillover learning*, a term they adapted from the field of human capital economics. Economists observed that “peer quality may affect worker productivity, even if worker output is independent, by changing the social context” (Jackson & Bruegmann, 2009, p. 1). Presence in the same workspace as a highly productive worker improves outcomes for all other workers. The mechanism that generates this improvement is social: “Knowledgeable and skilled individuals increase the skill and knowledge of those with

whom they interact, generating more ideas and faster macroeconomic growth” (p. 2). Jackson and Bruegmann determined that spillover also occurs within the teaching profession. They wrote. “Using two separate measures of peer quality, one based on observable teacher qualifications and the other on estimated peer effectiveness, we find that teachers perform better when the quality of their peers improves within the same school over time” (p. 28). A measurable spillover effect therefore exists; at a school with one particularly successful teacher, the remaining teachers also enjoy more success.

The spillover effect finding is consistent with models of teacher change. Clarke and Hollingsworth described the *interconnected model of teacher growth*, which ties together four domains of teacher activity: personal knowledge, outcomes, practice, and external sources of information. They locate teacher professional improvement at the nexus of those four domains: “the individual teacher’s professional world of practice encompass[es] the teacher’s professional actions, the inferred consequences of those actions, and the knowledge and beliefs that prompted and responded to those actions” (Clarke & Hollingsworth, 2002, p. 951). With reference to the external domain, teachers reflect on “many alternative sources of information [such as] professional publications and conversations with colleagues” (p. 953). Following reflection comes what Clark and Hollingsworth term *enaction*: “Putting into action of a new idea or a new belief or a newly encountered practice” (p. 953). In summary, teachers undergo professional growth when they reflect on many sources of information, including observing and interacting with other teachers, and then enact change based on that reflection.

In contrast to Clarke and Hollingsworth’s (2002) interconnected model of reflection and enaction, Jackson and Bruegmann (2009) suggest three separate

mechanisms for positive teacher change. First, since teachers share non-classroom duties with their colleagues, having a highly efficient teacher at the same school would equate to an overall reduction in those shared duties. The second mechanism that drives teachers to change is social standing: “The presence of good teachers may motivate their colleagues through contagious enthusiasm or through embarrassment over the unfavorable direct performance comparison” (Jackson & Bruegmann, 2009, p. 88). Finally, teachers who interact with successful coworkers may benefit from explicit or implicit modeling of successful teaching; they are present to witness teaching strategies that work (p. 89). All three processes improve the practice of teachers with high-performing coworkers within their school.

Peer Coaching

While Jackson and Bruegmann (2009) studied high-performing teachers who merely coexisted within at a school site, other researchers examined the impact of directed *peer coaching*. That term refers to a wide range of activities; Zhang et al. (2017) suggested that “Peer coaching generally means two or more professional colleagues work together to share ideas, teach one another, conduct classroom investigation, reflect on current practices, and build new skills or solve problems in the workplace” (p. 338). The peer-to-peer relationship may be unofficial; Thomson (2015) included within this category the “informal, everyday conversations with colleagues [that] happen serendipitously in department corridors” (p. 139). Thomson used grounded theory to characterize informal conversations among university lecturers who had received formal teacher training. In the end, Thomson believed that the “analysis provided evidence that conversations play a developmental role in supporting academics to learn about teaching

from colleagues, and these conversations can reinforce the learning from a formal development program” (p. 137). This finding supports the Vygotskian theory that learning is socially derived; that is, humans need to place new knowledge in a social framework to assimilate it (Overall, 2007, p. 73).

Social learning impacts more than just inexperienced or young learners. High-performing and experienced teachers, who may derive little benefit from traditional, asocial professional development, still display marked improvement in studies of peer learning (Papay et al., 2016). Papay et al. conducted a quantitative study of teacher performance data and determined that “the treatment effects for target teachers appear to hold for both experienced and inexperienced teachers” (p. 29), where *treatment* referred to intentional peer idea sharing or coaching.

Further, Papay et al. (2016) observe that traditional teacher professional development does not have a good track record:

Formal courses, called “professional development,” are today the primary approach to on-the-job training for public school teachers. ... Despite the substantial commitment of resources, the empirical evidence suggests little effect on teacher performance. ... By contrast, the one-on-one personalized approach to on-the-job training we study in this paper is apparently much more successful and much less costly. (p. 30)

Papay et al. found that peer coaching has more impact on both experienced and inexperienced teachers than traditional course-based professional development. Similar findings have led many schools and districts to adopt an expanded peer learning

framework of teacher support groups frequently termed either a *professional learning network* or a *professional learning community*.

Professional Learning Communities

The online peer coaching described by Zhang et al. (2017) represents a bridge between one-on-one, semi-formal peer coaching to a formalized system of teacher support groups frequently termed the *professional learning community* (PLC) or *professional learning network* (PLN). Although the terms are often used interchangeably, in some jurisdictions the former term (*community*) predominates to describe groups within a single school, while a *network* crosses organization and geographic boundaries (Prenger et al., 2021, p. 13). Prenger et al. (2021) found that an interschool network is more effective than one within a single school (or even grade level). That improvement grows from a network's "wider range of resources and expertise than single schools, greater opportunities for both self-reflection and collective reflection on practice, and increased engagement with more challenging and interactive forms of professional learning" (p. 14). Such a cross-institution network provides a good model for the online learning network proposed by this capstone project.

To design a project following the professional learning network model, it is sensible first to examine the question addressed by Prenger et al. (2021): "How do teachers in PLNs grow professionally?" (p. 15). Comparing the results from distinct types of professional learning networks, they found certain characteristics that predicted success for the teachers within the networks. The most-cited factor in achieving positive outcomes in a professional learning network was "the balance between providing structure to monitor the progress of the PLN and leaving room for the teachers' own

contributions, between vertical and shared leadership” (p. 46). Bolam et al. (2005) conducted an interview-based study with British PLN members and found positive impacts: “The interviewees’ responses suggest a positive impact on practice ... and morale in most cases. ... Examples of impact on collective professional learning for whole staff and sub-groups were reported in the majority of cases” (p. 133). Bolam et al. identified many distinct characteristics of successful PLNs, including “mutual trust, respect, and support” and “openness, networks, and partnerships” (p. 134). In summary, PLNs benefit teachers when they are collaborative and inviting, rather than following a top-down structure.

The wide reach of a professional learning community (PLC) can reduce its utility to individual teachers. Over time, professional learning communities and networks become “very wide and very broad” (Keane, 2020, 0:37), employed as a universal tool to drive school-wide improvement rather than individual learning. When that happens, PLNs can suffer from their reliance on formal institutional connections. If a PLN loses administrative support or if the network becomes viewed by its members as wasteful or redundant, it can be disbanded (Harris & Jones, 2010; Wells & Feun, 2007). Many professional learning communities are perceived by teachers as one more administrator-imposed requirement that fails to serve teachers’ learning needs (Jackson, 2019; Meeks, 2013; Mielke, 2015; Provini, 2013). In blog posts, Mielke (2015) bemoaned that “teacher voice is often removed from the community”; Meeks (2013) that “many administrators use the PLC movement as a guise under which they can mandate conformity among their faculty.” Similar complaints are legion; many teachers feel that administrators arrogate the professional learning communities and destroy both community and learning.

That shortcoming, however, does not apply to the community of practice model, which provides “sustained interaction and sustained work about a particular domain” (Keane, 2020, 0:28). Professional learning networks frequently prescribe modes of connection without reference to teacher preference. By contrast, communities of practice describe circles of mutual participation and support.

Wenger (2008) describes the voluntary nature of communities of practice this way:

[Communities of practice] come together, they develop, they evolve, they disperse, according to the timing, the logic, the rhythms, and the social energy of their learning. Thus, unlike more formal types of organizational structures, it is not so clear where they begin and end. They do not have launching and dismissal dates. In this sense, a community of practice is a different kind of entity than, say, a task force or a team. Whereas a task force or a team starts with an assignment and ends with it, a community of practice may not congeal for a while after an assignment has started, and it may continue in unofficial ways far beyond the original assignment. Based on joint learning rather than reified tasks that begin and end, a community of practice takes a while to come into being, and it can linger long after an official group is disbanded. (p. 96)

The community of practice (CoP) is the landscape within which peer learning, a form of social learning, can be effectuated for a population of teachers. Moreover, communities of practice are emergent structures; they develop organically when educators come into contact with one another and invest their energy in constructing shared knowledge about

their profession (Wenger, 2008). What remains, then, is to determine how online tools can be leveraged to promote CoP formation and development.

Podcasting to Support Communities of Practice

Podcasting is a nontraditional medium for professional development which confers some advantages on its users over conventional training delivery methods. Marketing researchers employ *uses and gratifications theory* (UGT) to assess why users choose to engage with online media (Dolan et al., 2016). UGT is “an approach to understanding why and how individuals actively seek out and use specific media to satisfy specific needs” (p. 262). McClung and Johnson (2010) conducted such a uses and gratifications study while podcasting was in its explosive early growth stage. They found that users engage with podcasts for four primary reasons: “entertainment, timeshifting, library building, and social aspects” (p. 93). *Timeshifting*, which is what the authors named the process of relocating reflective self-improvement away from impacted workday hours to less busy weekends or evenings, is especially crucial to educators in a virtual community of practice (Zumach & Portillo, p. 3). Informal educators frequently work unusual schedules and within different time zones, so timeshifting enables a type of asynchronous professional development that would be otherwise out of reach.

The third finding of the uses and gratifications study (McClung & Johnson, 2010) was *library building*, the process of “saving podcasts, building podcast libraries, and collecting podcasts on a computer” (p. 88). Library building characterizes another way in which podcasts improve communities of practice: they are recorded. Listeners can save valued insights for future reference, including sharing them with peers. Peer-sharing is part of what McClung and Johnson described as the *social aspects* of podcast listening.

Listeners can reflect and then discuss what they learned on their professional podcasts. Even the first motivation for podcast listeners, *entertainment*, can be a feature of communities of practice. As Wenger (2008) writes about CoPs, “Hard work is admired, but it is also essential to try to have some fun: joining in, telling and hearing stories, eating snacks, gossiping, or learning astonishing facts about the world” (p. 196). An informative and entertaining podcast, therefore, satisfies all four of the McClung and Johnson uses and gratifications findings.

In a second study, Perks and Turner (2019) added two more uses and gratifications to podcast listenership: *customizability* and *multitasking*. Multitasking allows listeners to engage aurally while accomplishing mundane chores: “Podcasts do not command the visual sense, and they can be listened to on portable devices, thus enabling people to accomplish housework and other tasks” (Perks & Turner, 2019, p. 112). Also, unlike mandated PLC meetings, podcasts can be skipped. If a particular episode rehashes a listener’s expertise or covers a topic not relevant to them professionally, that listener simply does not listen to that episode. Perks and Turner note that “Creating one’s own listening experience from all of the available episodes dovetails with multitasking and a desire for efficiency. In numerous ways, podcasts allow listeners to squeeze the most out of every moment” (p. 104). Perks and Turner additionally found that listeners develop a positive, if parasocial, relationship with podcast hosts and guests. In their interviews with podcast listeners, “the most common themes were the frequency or regularity of contact, opportunities to interact with hosts through social media or other avenues, ... the conversational quality of the podcast, similarities between listener and host, and host

sharing of personal information” (p. 109). This finding suggests that a colloquial mode of discourse builds the sense of mutual experience essential to a community of practice.

Affective Learning

Bloom et al. published the first volume of their learning taxonomy in 1956, covering the cognitive domain. This volume alone has assumed the title of *Bloom's taxonomy* and become a central tenet of curriculum design. However, Bloom's original formulation posited not one but three balanced domains: the cognitive domain, the affective or emotional domain, and the psychomotor or action domain (Pierre & Oughton, 2007). The second volume of the series, released in 1964 under the lead authorship of Krathwohl, proposed a taxonomy of the *affective* domain of learning. Rather than cognitive outcomes characterized by so-called Bloom verbs like *analyzing* and *predicting* (Anderson & Krathwohl, 2001), emotional activities like *receiving* and *prioritizing values* define the affective domain (Krathwohl, 1964). Although the cognitive domain is most present in educational research, the three domains intertwine. In the words of Lawrence (2008), “Our intellectual and emotional selves are deeply interconnected” (p. 66).

Despite its original position as an equal partner to the cognitive taxonomy, the affective taxonomy has been comparatively poorly researched. Baker et al. (2013) noted that “Traditionally, rational and objective thinking was given precedence, and was supposed to be radically different from ‘irrational’ emotions” (p. 13). Picard (2004), as well, observed that “The extension of cognitive theory to explain and exploit the role of affect in learning is at best in its infancy” (p. 253). And Pierre and Oughton (2007) noticed that “Somewhere along the many pathways of curriculum, the spotlight landed on cognition” (p. 4).

Although the affective domain lacked such a spotlight, investigators have witnessed and reported on the affective domain's impact. Hattie (2009) employed large meta-analyses to quantify effect sizes on student achievement of many different strategies. The influence of *play programs*—an intervention aimed at affective engagement—showed a positive effect on student achievement of 0.5σ (p. 154). In later meta-analyses published online, Hattie found that *improving self-efficacy* showed a positive effect on student achievement of 0.92σ , the twelfth highest impact among the 252 interventions studied (Hattie, 2017).

Thus, students achieve more when they are placed into a positive affect. Picard et al. (2004) summarized this process this way:

Research has demonstrated, for example, that a slight positive mood does not just make you feel a little better but also induces a different kind of thinking, characterised by a tendency toward greater creativity and flexibility in problem solving, as well as more efficiency and thoroughness in decision making. (p. 254)

A commonsense proof that a positive emotional state facilitates learning was illustrated by Baker et al. (2013) when they pointed out that the opposite is also true; that is, negative affect can prevent learning: “Certainly, it is common knowledge that ‘too much’ emotion can prevent clear thinking; but too little emotion can be associated with low engagement” (p. 14).

Even when unaware of these quantitative findings, many informal education practitioners concentrate on affective learning as if by instinct. Tran (2007) noted that “education in museums is primarily focused on, and driven by, affective goals” (p. 281).

Museum educators often design their programs to center affective impacts on curiosity, collaboration, and enjoyment (Griffin, 1998; Pierre & Oughton, 2008; Tal et al., 2014). In a survey of outdoor field trips in Israel, Tal et al. (2014) detailed how the informal educators blended almost all cognitive tasks, such as memorization, with affective ones, like games. The educators reasoned that the “supportive approach and encouragement made the students collaborate and enjoy” (p. 453). Informal educators have found that affective experiences help engage students with content.

Finally, the affective domain is especially critical to informal educators as it undergirds one of their advantages over classroom teachers: novelty. Patrick (2017) observed the “realms in which informal science education environments may be of unique value to science learners, including the affective domain (e.g., excitement, interest, and motivation to learn science)” (p. 312). The first of six strands proposed by the National Research Council (2009) in its framework of informal education was to “experience excitement, interest, and motivation” (p. 4) and “focuses primarily on arousing emotions” (p. 136). Or, as one teacher responded to a researcher, “In these classes, ... the main goal is ... just to get them interested and excited about it” (pseudonymous Gary as cited in Tran, 2007, p. 291). These informal educators have all observed and engaged the affective domain in their learners.

The Context Model of Learning

Education that occurs outside of formal school settings falls into two broad

categories: *independent* and *informal*¹. Independent education is the realm of the autodidact: self-directed experiences like exploring a forest with a bird book, exploring museum exhibits without a guide, or even watching an art documentary. Self-education has created a raft of autodidact natural scientists from Gregor Mendel to Michael Faraday (Malone, 2002). Informal education, on the other hand, refers to learning experiences mediated by an educator that occur outside of the school classroom (Mills & Kraftl, 2016). Examples of this type of learning are music lessons, hikes with a naturalist, and presentations at historical sites.

The interplay between informal and formal education modalities attracted research scrutiny during the 1980s and 1990s. Falk et al. (2012) conceptualized out-of-school learning as “an interaction between three overlapping contexts ... the Personal Context, the Sociocultural Context, and the Physical Context” (p. 26). In other words, learning in informal and non-formal environments depends on each learner’s *personal* prior knowledge, an interaction between that learner’s *cultural* context and that of the teacher or teaching material, and the unique *physical* features of the learning

¹ Some researchers (e.g., Eshach, 2007, p. 174) use the term *informal* as I am using *independent* and *non-formal* as I am using *informal*. The term *informal education* has preponderated in the sense of semi-structured learning experiences taught outside of school, so that is how I define the term for this project. Moreover, as the term *non-formal* can be easily confused with *informal*, I have adopted the term *independent* to describe self-directed educational activities like teaching oneself to cook or pursuing an interest in history by watching documentaries.

environment, whether rainforest, art studio, or museum. Falk et al. (2012) termed this three-part paradigm the *context model of learning*.

Within the three overarching contexts of personal history, culture, and learning space, Falk et al. (2012) located eight sub-contexts which influence successful informal education (see Table 1). In their analysis of the context model, Cox-Petersen et al. (2003) noted that “if any of the eight principles are neglected, meaning making in the museum is more difficult” (p. 201). Griffin (1998) delineated three guiding principles for school-museum learning: integration with the school curriculum, “self-directed ownership of learning,” and able facilitation (p. 661). And Tal et al. (2014) identified seven core practices for outdoor field trips, among them “[the educator] building on students’ discoveries and attention..., student-centered learning activity, [and] amplified physical experience” (p. 457). Only by addressing all eight of the learners’ internal contexts will the informal educator successfully mediate the building of new knowledge.

Table 1*Falk and Dierking's Eight Principles of Context Learning*

<ol style="list-style-type: none"> 1. Personal context <ul style="list-style-type: none"> • Motivation and expectations • Prior knowledge, interest, and beliefs • Choice and control 2. Sociocultural context <ul style="list-style-type: none"> • Within-group sociocultural mediation • Mediation facilitated by others 3. Physical context <ul style="list-style-type: none"> • Advance organizers and orientation • Exhibit design • Reinforcing events and experiences outside the primary learning site
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Note. Derived from Falk et al., 2012, p. 100.

These researchers' conceptualizations of the context model of informal learning have two commonalities: *autonomy* and *facilitation*. At first glance, autonomy and facilitation seem at odds with one another: the former implies self-sufficiency, and the latter requires an outside mediator. However, informal educators join autonomy and facilitation by leveraging their unique educational settings. Cornell (1989), a pioneer of contemporary nature education, opined that learners are both autonomous and facilitated at the same time. He wrote that educators first allow students to "absorb themselves in whatever they're looking at" but then "focus the child's attention without delay" (p. 15). Indeed, Cornell coined the term *flow learning* to describe just this juxtaposition of autonomy and facilitation. In Falk and Dierking's paradigm, facilitation bridges the gap between the institution's cultural context and that of the learner, but only when the learner retains sufficient choice and control. Tal and Morag (2007) reiterate this model;

institutions should “allow the individual to select and control his/her own learning” (p. 750). Thus, the context model blends a learner’s individual agency with the facilitation of a skilled mediator-teacher.

The context model argues that informal educators should engineer experiences that are as unique as possible. Many informal sites, however, design educational programs that closely resemble the students’ classrooms. Cox-Peterson et al. (2003) reported finding that “more than 75% of the tours observed were docent-focused, lecture-oriented, and often patterned with docent providing content information, docent asking a question, and then group moving to another area within the hall” (p. 206). In summary, although the context model of Falk et al. (2012) and the parallel approaches of Cox-Petersen et al. (2003) and Griffin (1998) all illuminate a learner-centered pedagogy, in many cases those frameworks have not been translated into practice, which remains educator-centered. Therefore, in the next section, I will review the literature on best practices in informal education.

Best Practices in Informal Education

The previous sections reviewed the literature of affective learning experiences and the context model of learning to provide a theoretical frame to the activity of informal education. Educators’ challenges, however, are more practical than theoretical; in a survey, new teachers cited the “lack of preparation for the challenges of teaching in the real world” (American Federation of Teachers, 2013). The question addressed by this project is *How can online tools be used to disseminate best teaching practices among informal educators?* Therefore, the literature must be reviewed on the topic of *best practices* themselves: what they are and how they can be located.

Defining Best Practice

Although the term *best practice* appears to be self-defining, if professionals leave it without a precise meaning, the term will come to signify individual preferences as much as universally ideal methodologies (Bardach & Patashnik, 2020). Therefore, it is important to locate an explicit definition for *best practice*. As Bretschneider et al. (2004) noted, “The term ‘best practice’ implies that it is best when compared to any alternative course of action and that it is a practice designed to achieve some deliberative end” (p. 309). Bardach and Patashnik (2020) applied the term to the realm of program evaluation in this way:

It is only sensible to see what kinds of solutions have been tried in other jurisdictions, agencies, or locales. You want to look for those that appear to have worked pretty well, try to understand exactly how and why they may have worked, and evaluate their applicability to your own situation.

(p. 133)

This commonsense definition fits the problem space well: informal educators seek to identify specific solutions to the problems of one informal setting to identify those that can be adapted and possibly adopted within their own setting.

However, two obstacles problematize this simplistic definition that best practices are just things that “have worked pretty well” (Bardach & Patashnik, 2020, p. 133). First, there is the problem of comparability. Since individual out-of-school education sites differ widely in approach, physical characteristics, and resources, their best practices will similarly diverge (Tran, 2008). A collected catalog of successful approaches from many sites would “suffer from severe selection problems and [not] form reasonably comparable

groups” (Bretschneider et al., 2004, p. 309). A museum, a music studio, and a nature center cannot reasonably expect to compare their teaching practices.

The second obstacle to locating ubiquitous best practices is the relative lack of rigorous study within the field. As informal education became more widespread, practitioners increasingly required a set of guiding operating principles around which to define their activities. As best practices research lagged behind this demand, practitioners determined their own best practices anecdotally. Bretschneider et al. (2004) noted:

This discrepancy between the institutional capacity for scientifically based research and practical demands for useful knowledge has created tension between practitioner communities and academics. ... This disparity leads to the growth of nonacademic sources of causal and prescriptive knowledge, including consultants [and] professional associations of users. ... Most of these sources typically develop a common sense form of “best practices” approach, where a group of experts use “human judgment” to identify the “best practice” from a set of cases submitted. (p. 308)

Employing human judgment to determine best practices inflicts human bias on the process. Such bias may be inadvertent but is often overt; Bretschneider et al. (2004) observed that there is an economic incentive for self-styled experts who prescribe best practices to professionals: “There exists a real market for ‘practical’ knowledge. Thus, various informational anomalies are created, including incentives not to test or verify and the creation of differentiation even when it is not present to enhance revenues” (p. 309). The identification of valid best practices within the field, therefore, presents numerous logistical problems. Bardach and Patashnik (2020) also discovered the inherent

“methodological and practical pitfalls” (p. 133) to defining best practice in any field; their name for these issues was the *internal validity problem*.

The Internal Validity Problem

Informal educators or those that train them must decide which teaching practices are *best*. Such a conclusion presupposes that the practitioner both accurately defined the problem and correctly measured the outcome of the intervention without the prejudice of their own optimism or ego (Bardach & Patashnik, 2020). External study is useful and welcome, but teachers have a more holistic, subtle view of what works within their classrooms. Indeed, in the problem space of good teaching, many best practices results are unmeasurable (Ericksen, 1983).

Although practices, or “tangible and visible behaviors” (Bardach & Patashnik, 2020, p. 135), are hard to quantify, they nonetheless need a philosophical underpinning: teachers should have a reason for the practices they select. As Bardach & Patashnik write, “a practice is also an expression of some underlying idea—an idea about how the actions entailed by the practice work to solve a problem or achieve a goal” (p. 134). In other words, a best practice is a behavior supported by an idea, an approach that stands out in its cleverness and effectiveness.

Notably, Bardach and Patashnik (2020) provide a critique of calling these practices *best* in the first place. The superlative implies both finality and universality. The authors argue that *good practices* or *smart practices* would be more accurate, since none of the techniques that educators describe as best practices are obligatory or perfectly suited to every situation (p. 133). They are simply methods that have worked,

anecdotally, for some educators; all that can be concluded is that so-called best (or smart) practices may be useful to others.

Peer Coaching

Thus, the literature argues that practitioners can never locate a singular set of best practices. Writing about teacher professional development, Díaz-Maggioli (2004) noted that “While certain teaching practices and learning principles might be suitable across the board, a one-size-fits-all approach, though economical, has been proven totally ineffective” (p. 3). Teachers are expert learners and experimenters who are aware of the nature of learning.

Since teachers and their educational settings are unique, prescriptive best practices must give way to a more adaptive model called *peer coaching*. Díaz-Maggioli (2004) describes this model in thus: “In peer coaching, the participants decide what to focus on in light of their current needs and levels of expertise” (p. 79). The population of informal educators includes trained teachers but also many others who have never considered how students learn, motivation strategies, or many other concerns (Tran, 2008; Tran, 2013). Díaz-Maggioli suggests that peer coaching is the ideal model for disseminating best (or *smart*) practices amongst a dispersed informal education community.

Conclusion

This chapter reviewed the findings of educational psychologists and researchers into social learning, communities of practice, and best practices for informal educators. The research surveyed showed that children and adults alike assimilate new knowledge in

social contexts. Learning comes not from mere exposure to new facts; students construct learning during lived experiences in community with other learners and teachers.

For the informal educator, that essential truth compounds the challenge of their profession immensely. A guide who only repeats information from their own area of expertise will fail to encourage visiting learners to construct new knowledge. The skills and techniques of successful informal education are subtle and require intentional effort to master (Christidou et al., 2022; Keyhani & Kim, 2020; Tran, 2008).

Fortunately, informal educators already unite into communities of practice; they share ideas with colleagues and jointly construct rich banks of knowledge about how to teach in their unusual settings (Grenier & Sheckley, 2008; Tran, 2008; Tran & Halversen, 2021). Even more fortunate, technologists have invented online tools that allow these supportive communities to grow beyond the bounds of time and space that once limited them (Kirschner & Lai, 2007). The next chapter describes a project to harness those technologies to buttress informal education communities of practice. This project, when implemented, will address the research question: *How can online tools be used to disseminate best teaching practices among informal educators?*

CHAPTER THREE

Project Description

Overview

Podcasts are an increasingly popular way for professionals to learn from one another (Weimer, 2021). Listening to podcasts represents an asynchronous version of peer learning, which is the primary building block underpinning teachers' communities of practice (Jackson & Bruegmann, 2009). Moreover, podcasts are available to practitioners during periods of passive but necessary non-professional activity, such as housekeeping or the daily commute (McClung & Johnson, 2010; Salmon & Edirisingha, 2008). Therefore, I created a podcast project as a means for informal educators to share their professional successes. This podcast, and its associated electronic content like a blog and electronic newsletter, address my research question *How can online tools be used to disseminate best teaching practices among informal educators?*

I selected a podcast and associated dissemination tools as the means to address this research question. I made this choice guided by discussions of practice communities among educational researchers and psychologists (Kirschner & Lai, 2007). Communities of practice are “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in an area through frequent interaction” (Wenger et al., 2002, p. 11). These essential professional supports are hard to maintain even among colocated faculty. Informal educators working in eclectic but detached institutions “care deeply about teaching yet feel isolated and disconnected from like-minded colleagues” to an even greater degree (Eib & Miller, 2006, p. 1). Educators use many tools to remediate this isolation. Among those tools, “a podcast can be

intentionally designed and implemented with the goal of inspiring engagement across a global practice community” (Zumach & Portillo, 2020, p. 1).

This chapter contains a detailed description of the podcast and website project I undertook. In the first section, I will describe the design process for the podcast, website, and associated tools. In the sections that follow I identify my intended audience and describe the timeline I developed to build the dissemination tools, all the way through recording and producing the podcast itself. I then describe the recruitment procedures I undertook to connect with conversation partners. Finally, I discuss the methods used to assess the impact and reception of the project within the informal education community.

Project Design

This section will discuss my project’s audience of informal educators. I also describe the project deliverables I selected to support the growth of a community of practice among educators from different institutions and locations.

Audience

This project’s intended audience is informal educators. For the purposes of this project, I limited my conversations to educators who teach over time frames greater than a few minutes but less than a school term. I excluded from consideration the docents who wait for individual members of the public to approach and ask a question, such as at information desks. Such work is important but does not follow the educator-to-learner knowledge transfer pattern under discussion.

Apart from those parameters, my project addresses the needs of a wide range of informal education settings. In the field, practitioners sometimes refer to *outside the classroom* experiences, such as those often offered by museums and cultural centers

(Eshach, 2007). However, informal education can take place within the students' very classrooms when someone other than the primary teacher conducts a lesson, such as a visiting scientist. In addition, some programs billed as educational resemble adventure travel more than academics, like ropes courses and canoeing at a summer camp. I specifically include those, as well, as they involve a single non-classroom teacher working with groups of learners. Finally, not every informal educator receives a paycheck for their work (Refvem et al., 2021). Volunteer educators are plentiful, and I include them within my audience of those seeking nominally *professional* development.

Although my background lies within informal science education, informal education settings covering other topics have much in common with science education. Notably, there are many park sites that blend science learning with history, Native American culture, and art, among other topics (Cloud et al., 2021; Dean, 2021). Teachers at these sites experience the same challenges as informal instructors, which is why the project scope covers all informal education. To summarize, an informal educator is any person who teaches academic or academic-adjacent content as a complement to the students' formal educational setting.

Zumach and Portillo (2020) explored "how a podcast can be intentionally designed and implemented with the goal of inspiring engagement across a global practice community." Following that example, I elected to create a podcast of conversations between informal educators to support their communities of practice. I describe the deliverables and requirements I established for the project in the next section.

Project Deliverables and Requirements

This project includes one primary deliverable, a podcast, as well as two subordinate tools for disseminating and connecting the podcast: a website and an electronic newsletter. To guide the creation of these deliverables, I began by defining requirements. *Requirements* are the “specifications or characteristics of the deliverables that must be met to satisfy the needs of the project, broken down to their most basic components” (Heldman, 2011, p. 88).

These are the project requirements I established:

Podcast. I developed requirements for the podcast based on sections of Green (2015), Morris et al. (2008), Salmon and Edirisingha (2008), and Zumach and Portillo (2020).

- Be aurally pleasing and engaging.
- Be available to all podcast listeners regardless of the application or device they use.
- Run no longer than 20 minutes.
- Include a broad array of voices.
- Foster a positive sharing of ideas.
- Provide links to the website.
- Count unique listeners.

Website. These requirements draw from Green (2015) and Morris et al. (2008).

- Be visually pleasing and engaging.
- Be easy to navigate.
- Host a page for each podcast episode.

- Provide a way to subscribe to the podcast.
- Host additional explanatory or connective pages.
- Provide a means to contact the project or become involved.
- Provide a way to opt-in to the electronic newsletter.
- Count unique visitors.

Electronic newsletter. I developed electronic newsletter requirements after Nisberg (2007) and Whitaker (2010).

- Be visually pleasing and engaging.
- Send one email newsletter for each podcast episode.
- Provide a one-click unsubscribe tool within each message and on the website.

Design Summary

The above-mentioned requirements informed how I designed each of the deliverables for the project. In the following sections, I will describe the creation of the podcast, website, and electronic newsletter, referring to these requirements.

Podcast Format

Many books for popular audiences describe what to include within a podcast. Most commonly, these resources suggest using a consistent introduction and ending segment, each with repeated words and music (Green, 2015; Morris et al., 2008). These bookending mechanisms support the sense of repetition: “Listening to podcasts is, by definition, an episodic experience. By providing a consistent beginning and ending atmosphere at the appropriate times, you put your listeners in the mood to listen to your show” (Morris et. al, 2008, p. 36). Therefore, I decided to create opening and closing script frameworks for the podcast.

In addition, I surveyed about fifty of my favorite podcasts to locate common elements that I found engaging and effective. Although this is a matter of personal aesthetic, I felt confident enough in my exposure to the podcast form to establish at least an initial program format. I made format choices that I believed would satisfy the requirement from the previous section that the podcast *be aurally engaging and interesting*. These choices can of course change in future episodes of the program.

Podcast Episode Framework

By combining the suggestions of Green (2015) and Morris et al. (2008) with my own observations of popular and engaging podcasts, I developed an episode *framework*, or set of components that would appear in most or all the episodes. These segments frame each episode and make them *aurally pleasing and engaging*, which was one of the podcast requirements I established. Table 2, below, provides details about each of the components planned for each episode.

Table 2*Podcast Episode Components*

Segment	Description
Cold Open Clip	The <i>cold open</i> is a short, engaging clip from the conversation used as a teaser for the program to come. It lasts no longer than ten seconds.
Musical Intro	Upbeat music at the beginning and end of the podcast frames the conversation. It lasts no longer than five seconds. (Green, 2015, p. 39)
Hello and Tagline	As the music fades, the podcast begins with a host introduction, the name of the podcast, and a short <i>tagline</i> that explains the mission and approach of the program in no more than a few words. The website address is also provided.
Podcast Business	This optional slot provides time for important announcements, such as upcoming events or listener surveys. (Green, 2015, p. 31)
Guest Short Intro	This introduction contains only the guest's name and affiliation. Guests will use their own words to describe themselves.
Edited Guest Conversation	The conversation itself takes place here, edited for time. If necessary for clarity, the host can insert asides, recorded later. The conversation ends with thanks and farewell. The guest is invited to provide their organization's website address or other pertinent contact information.
Guest Back Intro	The host bookends the recorded conversation by repeating a version of the guest's introduction. In addition, the host reads a disclaimer to the effect that the conversation was edited for time and (if applicable) combines recordings from multiple conversations.
Fun Fact	Podcast producers suggest that programs include consistent high-interest feature segments (Morris et al., 2008; Salmon & Edirisingha, 2008). Therefore, a regular feature of the podcast will be the inclusion of a fascinating fact brought in by one of the guests. When possible, this fact will be provided by a different educator than the primary guest, helping to satisfy the <i>broad array of voices</i> requirement.
Musical Outro	The music from the introduction slowly fades back in, signposting the end of the episode.
Farewell	As the music rises, the host thanks the guest, repeats the website address, and finally thanks the listeners.

Note. Certain of the elements, such as *Fun Facts*, can be omitted in the case of an extremely engaging but over-long conversation segment.

Website Format

Since podcasts are relatively new arrivals within the broader internet landscape, they require what Edirisingha et al. (2008) called “convergence” (p. 155), or integration with aspects of the social internet that are more familiar to potential users: email and the World Wide Web. The first important connection to the podcast is a website.

A dedicated website for your podcast will make a fine home for your audio archive, as well as providing biographies of your on-air team and behind-the-scenes photos—all of which give listeners the opportunity to explore and connect with the show in greater depth. (Green, 2015, p. 33)

This project’s website provides a convenient home for the project that users can access via a web browser, a technology they certainly already access. According to the Pew Research Center (2021), 96% of all American working-age adults use the internet (“Internet/Broadband Fact Sheet”) but only 41% of Americans had listened to a podcast within the past month (“Audio and Podcasting Fact Sheet”). Therefore, the project website serves as a necessary point of connection for the project audience and a collection point for relevant project materials, like links and transcripts, that the audience might want to access. Notably, web browsers can listen to the podcast itself directly from the website, without use of a specialized podcast application.

Taxonomies

I created a website for the project that hosts serialized, dated entries, also known as a *blog*, a portmanteau of the words web and log (Andrews, 2007). Regarding using a blog to support a podcast project, Morris et al. (2008) wrote that “incorporating a blog to maintain nearly all of your Web presence takes a lot of the burden off your shoulders so

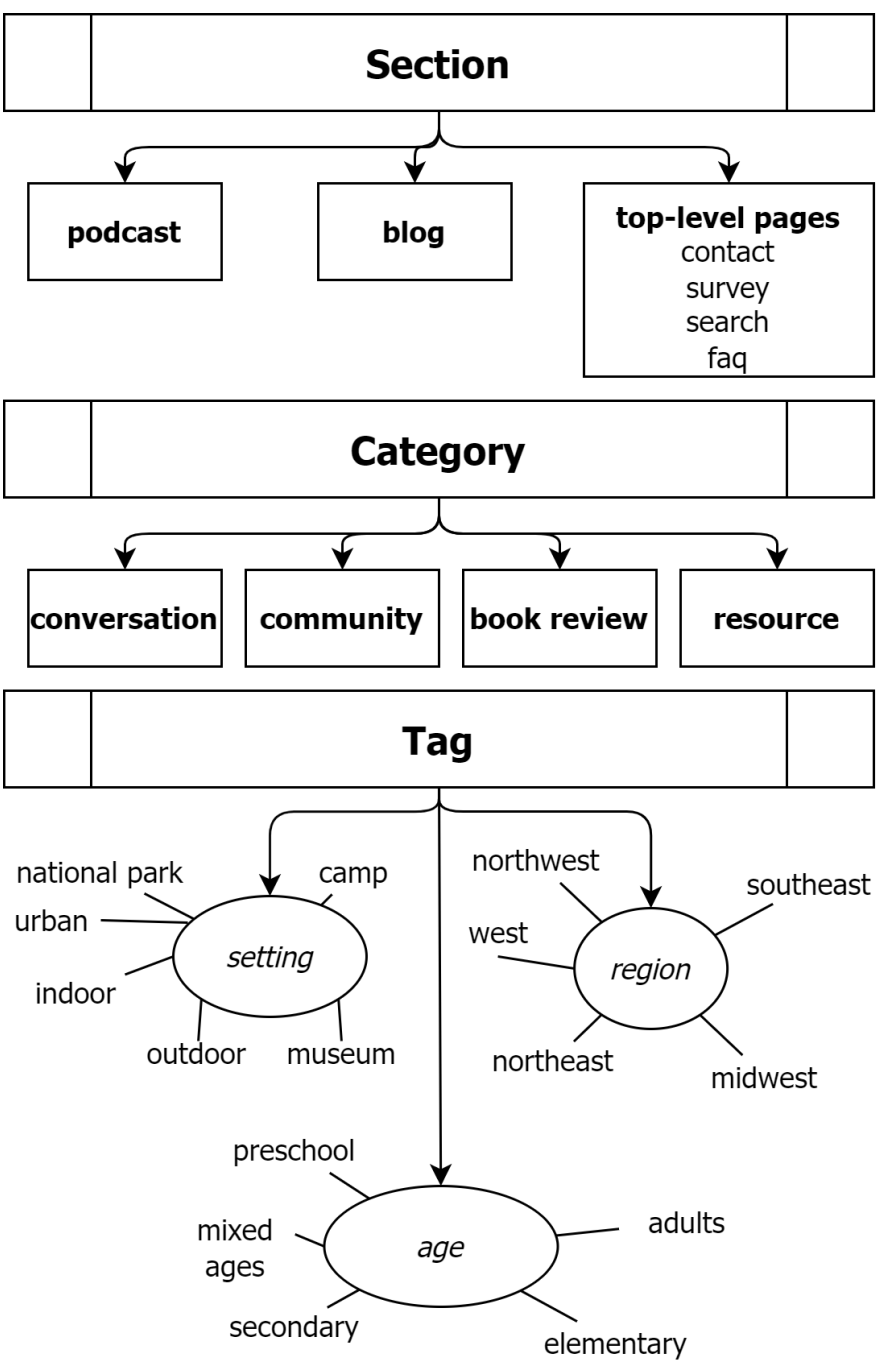
you can focus on the ever-changing aspects of your show” (p. 213). By using a blog content management system, I was able to organize the podcast and related content without difficulty.

The blog organizes its pages, or *posts*, through the assignment of multiaxial metadata, known as taxonomies. Khan (2017) explained that these taxonomies “organize and classify information and features based on the similarities and differences of the concepts behind those features.” In other words, the various taxonomies orient listeners to the content within the website and locate conversations that interest them.

The primary taxonomy for this project’s blog is the *section*. As the stop section of the taxonomy diagram below indicates, all pages on the website fall into one of the sections *podcast* or *blog*. Certain administrative functions, like the *contact* page, fall into a catch-all top-level section.

Figure 1

Website Taxonomies



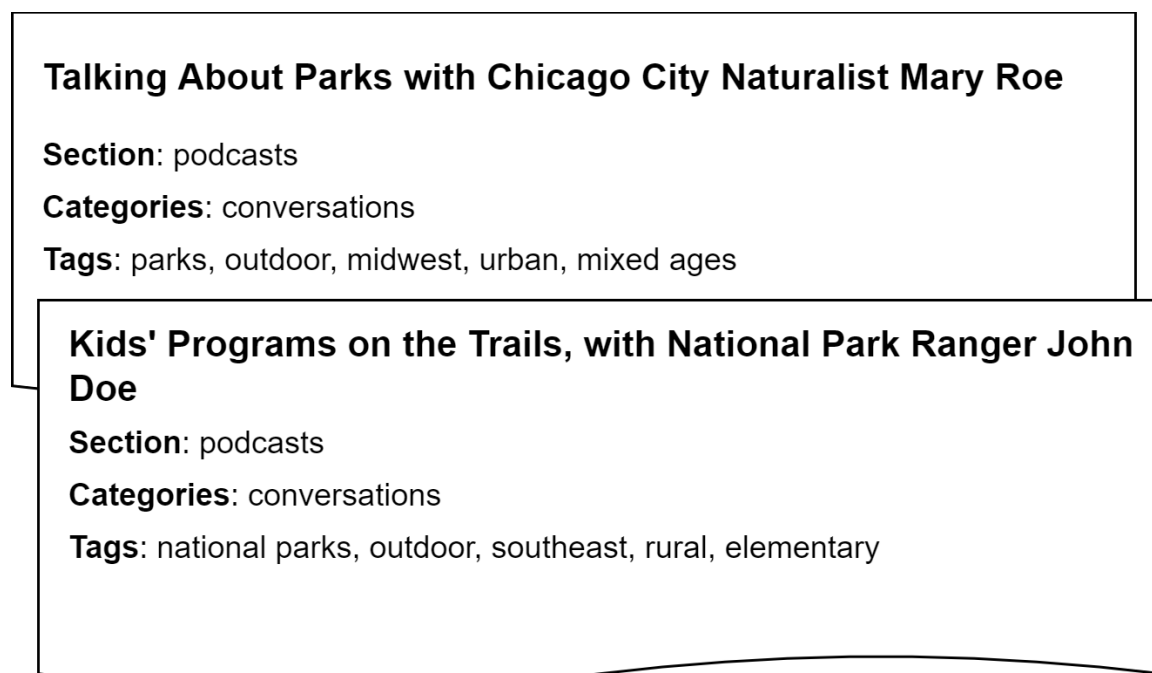
The second axis, or taxonomy, of site organization is the *category*. The podcast pages typically fall into the category *conversations*; there are additional page categories

for *community*, *book review*, and *resource*. Finally, each page contains a third taxonomy, the *tag*, also known as a search keyword. Pages can carry multiple tags; examples of these keywords are *outdoor education*, *museum*, *teaching techniques*, *working with adults*, *preschoolers*, *national park*, and so on.

As the figure below shows, each page on the website will be associated with various taxonomy keywords. These create searchable affinity groups within the site's content; a person interested in informal education in outdoor settings could explore only that content which had been associated with that branch of the taxonomy.

Figure 2

Sample Posts With Taxonomies



Note. As shown in this example, each podcast or other posting carries one or more keyword from each taxonomy.

Home Page Design

Before creating the home page, I designed a mockup to provide access to the two main taxonomies: sections and categories. The navigation bar at the top of the site provides links to the sections (including most of the top-level pages). These links satisfy several of the website requirements listed in the previous section: *navigation*, *contact*, *newsletter opt-in*, and *additional explanatory pages*. Below the navigation bar, a chronological list of recent posts and podcasts is displayed, which satisfies the requirement to *host a page for each episode*. The home page also contains a tag list or cloud, which connects readers to the tags taxonomy and allows a thematic approach to accessing the site. Finally, a search box rounds the requirement that the site be *easy to navigate*.

A mockup of the home page is included in Appendix B.

Electronic Newsletter Design

The electronic newsletter is released each time a new episode of the podcast is posted. Each newsletter begins with an introduction to the podcast topic for that week. Below that, any new non-podcast postings since the previous newsletter are glossed. Next, the newsletter contains a description of how to become involved in the project as a podcast guest, together with contact information. Finally, each newsletter ends with an unsubscribe link.

Recruitment

The first podcast guests were drawn from a convenience sample by necessity. Afterwards, I recruited as wide a range of voices as I could, employing multiple methods including cold calls, printed postcards, social networks, and word of mouth to connect

with successful informal educators from as many demographic, regional, and professional groups as possible. I undertook this effort to satisfy the podcast requirement that the show *include a broad array of voices*. The only limitation I followed is that all the educators speak (though not necessarily work in) English, since I do not have the budget or expertise for translation.

Invitation Letter

I created a letter that I used when posting or sending invitations to existing educator groups, such as those on social networks. In the letter, I informed guests that my goal is to “share what works best about informal education” and promise to keep a “conversational, positive tone.” I also note that my guests are not required to identify the organization for which they work, as some facilities have media policies that prevent employees from representing them publicly. Therefore, this letter served to help satisfy the podcast requirement that the program both *include a broad array of voices* and *foster a positive sharing of ideas*.

Project Evaluation

Several methods are used to gather information about the success of the project. First, the web server, podcast host, and email newsletter distribution service all automatically collect data about clicks, page views, and podcast downloads.

Next, the website hosts a response form that users are encouraged to use. This form asks for open-ended feedback from listeners, guests, and readers. For those who would prefer a direct contact, the project’s email address and phone number are posted on the site. Additionally, I created a survey instrument for podcast feedback. Each podcast

description contains that link, so it will appear in the podcast applications that listeners use to download the audio files.

I also enabled a comments section for website posts. This choice allows anyone to comment directly on each individual episode, thus satisfying the project requirement to *foster a positive sharing of ideas*. However, website comment sections are frequently overrun with non-participants posting vandalism or commercial content. Moreover, anonymous comments on the internet have a negative bias; that is, people post when they are unhappy with something more than when they are happy. This leads to an effect that Sobieraj and Berry (2011) called *outrage discourse*:

Outrage sidesteps the messy nuances of complex political issues in favor of melodrama, misrepresentative exaggeration, mockery, and improbable forecasts of impending doom. Outrage talk is not so much discussion as it is verbal competition, political theater with a scorecard. (p. 20)

Both outrage discourse and vandalism would dilute the *positive sharing* requirement of this project, so I actively monitor the posted comments regularly to mitigate comment negativity.

Tools and Technologies

This section describes the tools and technologies I used to create and maintain the podcast and other components of the project. It first describes the writing and design software I used and identifies the assorted services that host the online tools.

Identity

I chose the name *the Classroom Beyond* for the podcast and website. This phrase captures my concept of a learning space separate from the traditional classroom. I put the

preposition *beyond* after the noun for two reasons. First, I felt that the inversion would add interest and memorability to the name. Second, and more practically, there are dozens of podcasts and websites already listed with the name *Beyond the Classroom*, and I hoped to avoid having this project confused with them.

Website

To create the blog, I used static site generator software called Hugo, which allows authors to create web content in the form of text files in a format known as Markdown. The software merges the text files with a template that I customized to create the final layout. The site itself resides at Digital Ocean, an internet hosting provider.

I created graphics for the site (as well as the podcast) using draw.io, an online tool that allows creators to generate files in graphics format appropriate to websites. In designing the graphics, I followed the advice from *Podcast Master*: “In terms of your podcast’s image, go for bold colors and minimal text” (Green, 2015, p. 33).

Podcast

Podcasts are audio files stored on an internet-based server, together with an index file that lists episodes and certain other metadata (show length, abstracts, the producer’s name, and so on). A standard website server, such as the one where I created the blog, could host these files. However, several factors argue for enlisting a separate and dedicated hosting provider. Podcast professionals note that the audio files may exceed the storage limits of a typical website server (Gray, 2020). Moreover, counting unique downloads of a podcast is extremely complicated, as some podcast software retrieves these audio files in tiny parts rather than one at a time (Gray, 2020). Finally, “if you want your podcast to be heard you need to get it into iTunes” (Green, 2015, p. 23). A dedicated

podcast host handles the process of connecting the podcast to popular catalogs (like Apple Podcasts, but also Stitcher, Spotify, and a dozen more). In the previous section I defined that two of my project requirements were *to have the podcast widely available* and *to count unique listeners*. Therefore, I decided to sign up for a dedicated podcast server; I chose libsyn.com for its low price and good reputation.

Electronic Newsletter

I use a newsletter platform called SendinBlue to handle electronic newsletter subscriptions. A page on the website allows followers to sign up for the newsletter with an email address. Each time I publish a new podcast, I create a short email and send it using the service to the people on the list. The newsletters contain a link by which users can unsubscribe from the messages, thus satisfying the project requirement to *provide a one-click unsubscribe tool*.

Contact Technologies

To support the podcast and its related tools, I created an email address, info@theclassroombeyond.com, using the company Zoho, which is a low-cost electronic mail provider. Additionally, I registered a free internet telephone number using Google Voice, so that I could contact guests using channels separate from my personal contact information.

Tasks and Timeline

This section describes the timing of the specific tasks involved in accomplishing my project. A table of the task completion dates appears at the end of this section.

Planning

First, I accomplished several planning tasks. I designed mockups of the website, the podcast format, and a sample e-newsletter format. I also prepared recruitment materials, such as a letter to potential conversation partners and a list of people I might contact.

Establishing Tasks

Several accounts with online service providers were required to host the technologies required by this project: a web server, podcast host, email service, internet telephone service, social media, analytics, and survey accounts. Then, I created a website skeleton to host the podcast and electronic newsletter. Next, I created or located additional media to include within the website and in the podcast, such as royalty-free graphics and sound clips.

Interview Guide

To support the creation of the guest conversations listed on the segment framework above, I next created an interview guide. Weiss (1995) described this instrument in *Learning From Strangers*, his book about qualitative interview research. Although my project consists of conversations rather than research interviews, I found “a listing of areas to be covered in the interview along with, for each area, a listing of topics or questions that together will suggest lines of inquiry” (Weiss, 1995, loc. 937) an essential tool for conducting the conversations.

I reproduce the interview guide as Appendix A.

Pilot Conversations

To troubleshoot any potential production pitfalls, I began the podcast using a set of sample conversations. As Morris et al. (2008) suggested, “By editing five episodes before officially launching your podcast, you not only develop your approach to podcasting but also get a good idea how long it will take you to record and edit a single episode (p. 58). I recorded these pilot programs with actual informal educators who are also personal friends or classmates.

I incorporated the pilot conversations into the podcast format I had created, making use of the royalty-free music to fill out the aural experience. Then, I released the pilot podcasts and posted them on the website.

Revisions and More Conversations

As I began to work with the interview guide, the website, and the podcast technologies during the pilot phase, certain parts needed more information or a different approach. Therefore, as I was recruiting new guests, I also revised the interview guide and podcast formats.

Finally, I recorded a new set of conversations and posted them to the podcast server and website.

Timeline

The project took place from the spring through fall of 2022. I spent May planning and setting up servers as well as creating a skeleton of the final project content. In June, I recruited a pilot group of educators, recorded conversations, and produced them into a set of podcasts. In July, I revised various materials based on my pilot results and began to

recruit and record with a wider group of educators. I continued to record and produce those podcasts through November.

The time requirements of the project tasks that were described in the preceding sections is presented in Table 3, below. I maintained this task list throughout the project. Although I had to update tasks and dates as I encountered unexpected challenges, it served as a framework around which to manage the work of the project.

Table 3*Project Task List*

Task	Begin date	End date
plan: website sections	5/29/2022	6/4/2022
plan: write tagline and mission statement	6/9/2022	6/17/2022
plan: podcast format	6/18/2022	6/20/2022
plan: e-newsletter format	6/9/2022	6/11/2022
plan: letter for conversation partners	6/9/2022	6/11/2022
plan: list of pilot interviewees	6/9/2022	6/11/2022
establish: phone number	6/12/2022	6/13/2022
establish: locate bed music	6/16/2022	6/17/2022
establish: email account	6/9/2022	6/12/2022
establish: locate podcast host	6/13/2022	6/17/2022
establish: locate music	6/23/2022	6/23/2022
establish: create website skeleton	6/13/2022	6/23/2022
website: install analytics	6/5/2022	6/9/2022
website: create user survey	6/10/2022	6/12/2022
pilot: create interview guide	6/2/2022	6/6/2022
pilot: contact guests	6/24/2022	6/26/2022
pilot: record conversations	6/27/2022	7/10/2022
pilot: edit conversations	7/1/2022	7/13/2022
pilot: assemble podcasts	7/14/2022	7/17/2022
phase 2: revise project from pilot results	7/21/2022	9/1/2022
phase 2: list of guests	9/27/2022	9/29/2022
phase 2: contact interviewees	9/30/2022	10/11/2022
phase 2: record conversations	10/12/2022	11/9/2022
phase 2: edit conversations	10/14/2022	11/19/2022
phase 2: assemble podcasts	10/18/2022	11/4/2022
phase 2: update website	11/4/2022	11/14/2022
phase 2: go live	11/29/2022	11/29/2022

Note. Dates are approximate.

Summary

My review of communities of practice prompted me to launch a podcast of conversations with informal educators, a website, and an electronic newsletter. I will use

these electronic tools to collect and disseminate best practices in informal education among practitioners in the field. In the next chapter, I will describe my experiences creating these tools and reflect on my assessments of how well the project addressed the research question *How can online tools be used to disseminate best teaching practices among informal educators?*

Chapter Four

Conclusion

Introduction

I created *the Classroom Beyond* podcast, website, and electronic newsletter to address my research question *How can online tools be used to disseminate best teaching practices among informal educators?* The podcast highlights informal educators sharing their favorite practices in a conversational, non-didactic way. The website serves as a home for those podcast episodes and makes additional connections between the interview topics with practical advice, research, and related topics. The electronic newsletter ties the two together by informing listeners when the site gains new material as well as featuring selected podcast and website highpoints.

In this chapter, I review my motivations for creating these online dissemination tools. First, I summarize my main learnings through the stages of the project: concept, literature review, instrument design, and, finally, execution. Next, I appraise my literature review to locate topics where existing research presaged my capstone outcomes. Then, I examine the informal conversations that I conducted as part of the capstone project to extract evidence of the project's implications. Through that appraisal, I attempt to determine how these recorded and shared conversations might impact informal education practice and policy. The conversations similarly provide evidence of the project's limitations, so I postulate future efforts that might begin to overcome these limitations.

Finally, I consider future directions for *the Classroom Beyond* project. In particular, I elucidate my plans to launch the podcast and spread the word among other informal educators. I conclude the chapter and this report by describing how the project

can serve as part of a constructive community of practice for informal educators. In that conclusion, I attempt to show how my project outcomes link to the research question *How can online tools be used to disseminate best teaching practices among informal educators?*

Major Learnings

This section describes major threads of discovery I made while planning and executing my dissemination project, *the Classroom Beyond*. These learnings helped me address my research question *How can online tools be used to disseminate best teaching practices among informal educators?*

My first discovery was that recruiting informal educators for a podcast clarified my sense of the scope of that field, enlarging the impression I had garnered through decades of professional life. Second, I solidified my existing awareness of how formal and informal education are not opposites and, in many ways, are quite similar. Third and finally, through developing this project in the novel medium of audio recording, I realized that the formalistic details of communication are as crucial as its contents. In the following sections, I discuss each of those three discoveries, citing specific passages from my recorded conversations.

Recruitment

My first major discovery occurred while recruiting informal educators to the project, and it was that I needed to enlarge and refine my internal definition of the group itself. Having been an outdoor educator and classroom teacher myself, I viewed the field through those lenses. My experiences let me to conclude that informal education consisted of roughly equal parts museum and field trip guides, most of whom work

outdoors at least some of the time. My own job history constrained my ideas about the field.

In reality, though, informal educators engage in a wide range of activities. When I interviewed a British nature guide, for example, I found that typical outdoor education in the United Kingdom includes more experiential components meant to challenge students' self-conception than academic concepts like ecology or the names of local flora (G. Davies, personal communication, September 5, 2022). Similarly, my recruitment efforts led me to realize that many youths' primary connections to informal education are by means of allied educators such as after-school counselors, music teachers, and sports coaches.

I also discovered many venues for informal education that I had not considered. I talked with art docents, piano teachers, and garden-based science teachers. Some informal educators coach cheerleaders and others discuss architecture while walking through city streets. The field is satisfyingly vast and diverse. However, I also discovered that most of the informal educators with whom I spoke do not consider themselves members of a unified profession; my impression was that a zoo guide does not feel much commonality with a museum educator and certainly not with a music teacher. I discuss this realization of non-community in the *Challenges of Community* section (p. 77).

My recruitment efforts also taught me ways to engage people outside my own subspecialty. The proposition underlying this capstone is that diverse informal educators will find value in learning from one another. To achieve that goal, I sought out conversation partners who had unique perspectives that differ from mine. Even when I found such people, though, I discovered that not all were adept at clearly conveying their

work to an audience outside their immediate fields. Recruitment, I discovered, meant not only searching out practitioners, but also guiding them to locate the parts of their practice that would be valuable for other educators to hear and discuss.

Formal, Informal, and Non-formal Education

As I uncovered during my literature review, investigators have developed various taxonomies to describe the universe of educational approaches that include classroom education, organized non-classroom programs, and ad hoc educational experiences. The literature tends to use the term *informal* for autodidactic experiences, like reading a book (Eshach, 2007, p. 173). Educator-mediated experiences like museum field trips and piano lessons, then, are *non-formal*. In popular parlance, however, that usage has completely reversed; Eshach and others would consider the educators with whom I spoke to be *non-formal*. However, they themselves universally used the term *informal* to describe themselves. As I described in chapter one, I settled on the taxonomy *formal* and *informal*, following preponderant use, adding *independent* to describe self-directed learning experiences.

Moreover, most of my informal educator conversation partners consider themselves adjuncts to in-school education, tools to extend the reach of formal classroom teachers. Through this self-conception, I came to understand that informal education is not the mirror opposite of formal education but, rather, both exist on a spectrum that locates all forms of knowledge-building within a complex matrix of learners, educators, elders, and peers. I grew to understand that informal education works in much the same way as classrooms and even independent learning experiences. Thus, I came to

conceptualize all learning as having three common elements, like those suggested by Falk et al. (2012):

- A physical element: the learning environment
- A human element: learners, educators, wise elders, and peers who mediate learning
- An internal element: the ways the learner engages with the physical and human learning element

These three elements mediate all knowledge building. In a school (physical), students and teachers (human) marshal students' prior knowledge (internal) by means of formal curricula. In a museum (physical), a guide leads visitors (human) who arrive with a set of cultural and intellectual understandings (internal) to discover new truths about the target subject area. At home (physical), people (human) who enjoy a particular subject (internal) obtain reference books or videos and teach themselves more about it. These three scenarios—in the Eshach formulation, the *formal*, *non-formal*, and *informal*—resemble one another much more than they differ. In each case, three different elements—physical, social/external, and internal—combine to mediate the educative experience.

Communication's Formalistic Details

Of those three aspects of educational experiences, the second, human, element deserves special attention because education always involves at least two people, nominally the *teacher* and the *student*. That duality is true even of autodidactic experiences where a book author or documentary filmmaker might play the nominal role of *teacher*. In any case, the human context encompasses some form of communication

between two or more people. It behooves the educator, therefore, to select the fitting modes of communication for different topics and settings and then become expert in their use.

In my case, as an outdoor and classroom teacher, I discovered that oral language is my primary tool. Teachers become expert in several different oral instruction structures, such as *lecture*, *conversation*, and *Socratic dialog*. My project introduced me to different modalities, such as *trilogic discourse* and, of course, the *journalistic interview* I employed for the podcasts. The capstone work demonstrated to me that each of these oral communications approaches relies on different formalistic conventions. In short, successful teachers, whether formal or informal, must master the formalistic concerns of the communications methods they employ to promote knowledge building in their learners. On a personal level, to bring the project to successful completion, I had to master each modality. It was not enough to simply have a conversation and record it; I had to approach each interaction conscious of the conventions of the interview form or risk losing my interlocutors' major messages.

Conclusion

In this section, I described three major discoveries I made while engaged in this capstone project. First, I uncovered the way in which recruiting colleagues with whom to converse taught me the boundaries of the project; the very activity of asking people about their work defined the project's scope. Next, I explored more thoroughly the nature of learning both within and outside of a formal classroom, anchoring this understanding in Falk and Dierking's context model of learning. Finally, I discovered that conveying

information by means of conversations requires a specific formalistic approach to the material.

Having characterized these three major areas of discovery, I will now make connections between those learnings and prior work in the field that I researched before I began the project. The next section summarizes key areas of my literature review and I describe ways in which these areas align with my project's outcomes.

Connections with Literature

In this section, I revisit my literature review to locate those findings reinforced or contradicted by my experiences completing the capstone project. I divided my literature search into four parts: peer learning and communities of practice; affective learning; Falk & Dierking's context model of learning; and, finally, best practices in informal education.

Peer Learning and Communities of Practice

My first area of review was the phenomenon of intragroup knowledge sharing, often called *peer learning*, with specific reference to Wenger's communities of practice model (2008). Several of the educators who participated in the podcast referred to learning from colleagues. A few of my conversation partners referred to broader learning networks in ways akin to the communities of practice model. One educator described learning techniques for including Title I (low-income) schools through engagements with other museums (G. Payne, personal communication, October 31, 2022). A few conversations referred to input from cultural bodies, such as Native Nations, when their teaching material touched on culturally relevant topics. One educator described how her conservation center "stay[ed] in touch with a local Indigenous group, ... trying to bridge environmental education from our side with their teachings. And so we asked, 'Is it is it

for us to do this, [to] to share stories of Indigenous past and history?’” (C. Dobie, personal communication, August 20, 2022). She was not alone; several outdoor educators described similar efforts to build community with Native Nations to improve their practice.

Apart from those isolated connections, however, most of my podcast guests referred to peer learning only within their own institutions. Very few had networks of outside colleagues. I will return to that finding to suggest a greater role for cross-institution communities of practice in the Implications section (p. 72).

This literature review section concluded with research into how podcasting supports communities of practice. Wenger (2008) notes that, “since the life of a community of practice as it unfolds is, in essence, produced by its members through their mutual engagement, it evolves in organic ways that tend to escape formal descriptions and control” (p. 118). As of the completion of this capstone, *the Classroom Beyond* podcast is too young to have produced feedback about its efficacy as a support mechanism for communities of practice. However, many podcast guests expressed interest in following the experiences of other educators, saying things like “I would love to keep up to date with your project and what you’re working on. I think this is really cool. And I would love to stay in the loop” (K. Yeomans, personal communication, September 26, 2022). So, although it could not be expected that the podcast would drive a community of practice to come into being, the positive feedback from early guests implies that the project could be a part of an organic unfolding of the professional connections that undergird such a community.

Overall, my capstone project uncovered many connections with its literature review findings on peer learning and communities of practice. The next section will describe how the literature review explored the role of affective, emotionally centered learning during informal education experiences.

Affective Learning

Next, the literature review explored the primacy of affective learning for informal educators. The main finding from this section was that knowledge acquisition has an affective component, rather than being a wholly “rational and objective” process (Baker et al., 2013, p. 13). One of my podcast episodes describes how educators at the Cabrillo Marine Aquarium teach with a physical call-and-answer structure called *do-it-do-it*, in which docents demonstrate various natural history topics using full-body physical gestures that learners are then asked to mimic. Their education director likened affective knowledge acquisition within the informal environment to a dancer’s development of muscle memory.

When you’re doing dance ... you have different numbers in the dance that you’re doing. It conveys a story. And that’s the same thing as do-it-do-it. You have certain things that you’re trying to convey, it’s a storyline. ... With the kids, it’s that engagement and it’s that dance and that movement, and now they remember “regenerator,” or they might remember “sea stars can regrow an arm” or they might remember “grunion dig in the sand.” ... You get generations of the same family that come to Cabrillo, ... and when they come, they say, “I remember doing this when I was a kid when I came here.” (Charles, 2022b, 11:52)

Many of the educators with whom I spoke had comparable stories in which they reported their impression that affective experiences lead to long-term knowledge retention. These anecdotal findings are reflected empirically in such sources as Picard et al. (2004), who concluded that “a slight positive mood does not just make you feel a little better but also induces a different kind of thinking, characterised by a tendency toward greater creativity and flexibility in problem solving” (p. 254). Informal educators focus on providing fun, engaging experiences both intuitively and by training.

The finding that informal educators center the affective domain of learning recurs many times in both published research and my conversations with teachers. The next section of the literature review described how educators engineer those affective, emotionally engaged moments. Specifically, the literature suggested that informal educators must consider their learners’ conditions during informal education experiences, a paradigm sometimes named the context model of learning.

The Context Model of Learning

The next area of my literature review explored the context model of learning proposed by Falk & Dierking. The model suggests that educators must consider each learner’s position within a three-part structure of contexts: the personal context, the sociocultural context, and the physical context. In my podcast conversations with educators, I made connections to all three parts of the model.

The context model’s first pillar is the personal context, which describes the memories and emotions that each individual carries with them upon entering an educational experience. Many adolescents face issues of racial, gender, and sexual self-identity, and one educator described “striving for inclusion and anti-racism in science

learning... like training our facilitator team to not make assumptions about the gender of visitors that can be jarring...and working on reducing unnecessary jargon on the floor” (G. Payne, personal communication, October 31, 2022). Such acknowledgement of each learner’s personal context arose frequently during conversations I recorded for the podcast.

Second, educators considered the sociocultural interconnections of the context model. I spoke with one educator at a historical California mission, a site emblematic of the often-violent intersection of European, Native, and Mexican cultures. Since most of her students draw ancestry from one or more of those cultures, telling the California mission story can be fraught. Nonetheless, this educator discovered that even young students learn from the sociocultural interplay in which they find themselves.

I think 10-year-olds have the capacity to understand it if you say to them, ‘This is a complicated story, and different people see this in different ways.’ And so we’re going to tell the story from a number of perspectives, from the perspective of the Native people who would call what happened in California with the missions, genocide. And it’s extermination of their culture and quite a number of other people. We’re going to tell the story from the perspective of the missions, the padres, who believed that they were bringing the true religion to the people here, and that the Spanish way of life was the right way of life. ... So, if my visitor is somebody who came from mass across the street at the Catholic church, ... they’re coming with a certain mindset about the Catholic church, and I don’t want to alienate them. ... Visitors should see themselves reflected in the stories

that the park tells. (E. McFarland, personal communication, August 26, 2022)

Across the country, a science museum educator from rural Georgia described her response to fundamentalist Christian visitors who openly reject her lessons:

We get a lot of children who have been taught that evolution is not real, that it is an absolute lie, that everything represented at the museum is false. So my biggest challenge that I have had to deal with is talking to kids in a way that says, you know, the science is real. But that doesn't mean your faith isn't real ... you don't have to pick. (Charles, 2022a, 3:54)

In other words, since sociocultural interchanges form one basis for a young person's intellectual development, the context model dictates that we incorporate the learners' own cultural touchstones to ensure knowledge acquisition.

The third and final tenet of the context model is the physical context, which is to say that informal educators should acknowledge and incorporate the novelty of the physical spaces in which they teach. Most of the educators with whom I spoke employed their unique environs in their teachings. Indeed, one of the strengths of informal education is that it typically takes place outside of familiar locations like a classroom.

One British outdoor educator noted:

They're on a journey, you know, going along the coast on the cliffs. They can't just sort of cop out partway and decide not to go anymore ... it forces them to keep on going for resilience, forces them to ... work with

one another, ... even if it's just, you know, verbal encouragement to each other. (G. Davies, personal communication, September 5, 2022)

Informal educators intuitively know that site novelty promotes student engagement, whether the location be a museum, dance studio, or, as in this case, a rugged wilderness area. Successful informal educators acknowledge the utility of learners' physical contexts in delivering engaging content-filled experiences.

In my conversations, I learned that informal educators employed the three-part paradigm of the context model of learning even though none, when I asked, were aware of the academic model itself. The underlying finding is universal: informal teachers must consider the internal contexts of their learners, including how students relate in each moment to the physical and cultural world around them, in order to effectively mediate knowledge acquisition.

Best Practices in Informal Education

Finally, my literature review examined the concept of *best practices*. The literature chiefly indicated that the ideal dissemination of professional best practices is through a peer coaching model that adapts to each practitioner's experience and teaching environment (Díaz-Maggioli, 2004). Many of my interview subjects echoed that finding. One aquarium director responsible for training new educators noted that the experienced staff who are "intrinsically good at telling stories or intrinsically good at capturing an audience [are used] as a model for what a tour could look like" (Charles, 2022b, 6:41). He further noted that at first, new teachers staff those exhibits where they have preexisting knowledge. Only after peer observation and consultation are they slowly moved into areas that are more novel to them. This approach exemplifies Díaz-

Maggioli's peer coaching model. Many other successful educators similarly described training approaches adjacent to peer coaching, as the literature suggested.

Conclusion

This section reviewed the four main parts of my literature review: peer learning and communities of practice; affective learning; Falk & Dierking's context model of learning; and best practices in informal education. For each section, I located links between research findings and portions of the conversations I recorded for my podcast. That strong attachment suggests that working informal educators ascribe to ground truths that align closely with research in the field, even when those professionals are unaware of the theoretical model's existence. In the following section, I will build on that alignment to discuss policy directions implied by my project.

Implications

In this section, I make three specific policy proposals suggested by the outcome of my project. First, I describe the need for communities of practice among informal educators. Next, I make a case for supporting informal educators who deal with topics that their communities do not accept as truth. Finally, I suggest reasons to justify an increase in financial and practical support for informal educators from the school systems to which they are adjacent. These are the three primary policy implications of my work attempting to address the research question *How can online tools be used to disseminate best teaching practices among informal educators?*

Proposal: Create Online Communities of Practice

We should have more mechanisms to communicate among informal educators. A few of the educators with whom I spoke acknowledged the value in sharing ideas with educators outside their own institutional bubbles. One music teacher noted:

I'm grateful for being in community with other more established music teachers...I've been able to call them or write them and say, Hey, I've got this...issue, what do I do? Now I'm finding as I become established myself, I get to be that person—whether it's business practices, or teaching strategies, I'm being asked those questions too. So it's nice to convey that knowledge. (J. Cornfoot, personal communication, October 27, 2022)

Other educators with whom I spoke echoed this teacher's sentiments; many appreciated what communities they could find but felt that they were hard to access. For these teachers, building online communities of practice would reduce the barriers they face when trying to access groups of mutually supportive colleagues.

Proposal: Build Political Support

We need structures for supporting teaching topics that are controversial in their communities. Some of the teachers with whom I spoke face scrutiny by community members when their subject matter conflicts with community belief systems. One educator described an interaction at her rural science museum:

I had a little girl tell me the other day she was going to bring me a Bible. And I said, I really appreciate that there's always a great chance to learn more. ... And that's fantastic to me. And no, I don't really shy away from

talking about anything. They're here to learn. I'm here to teach. And I don't think education needs to be curtailed or trimmed to fit in with somebody's personal bubble. That's not why I'm here. I'm here to teach you. (K. Yeomans, personal communication, September 26, 2022)

The same educator noted that challenges to her material were often brought by the very classroom teachers who had escorted their students to the museum in the first place. While this teacher's poise is admirable, the anecdote illustrates that educators' work is made more difficult amidst a culture of contrariness. Such conversations from this project imply that political and educational leaders should do more to spread the notion that learning facts need not challenge one's faith.

Proposal: Build Financial and Practical Support

Society should support informal educators financially and practically because they augment classroom education. Many of the educators with whom I spoke considered that their role frequently filled in financial and practical chasms left behind by decades of school budget and leadership crises. One science educator described her organization's role in schools this way:

Science is not always but quite often, very materials heavy. And there are types of lessons where the materials are expensive. ... So, we are able to bring in programs with these materials that teachers don't always have access to. And then another big reason is, especially at the elementary school level, not all elementary school teachers have trained in science ... Others are doing enough science to do what they're required to, but don't

necessarily have the confidence of teaching science. (B. Sobol, personal communication, September 28, 2022)

The implication is that informal educators, often working within private nonprofit institutions like museums, provide not just engaging fun days, but crucial parts of school curricula. Although some raise funds for their work through use fees, many provide their services below cost or free of charge. Therefore, it would be appropriate to explore public funding sources for these informal educators.

Conclusion

Several policy implications emerged from the conversations I had with informal educators for my podcast. The primary implication is that informal educators would benefit from communities of practice. In addition, informal educators deserve political and financial support in the same way as formal schools. Such policy questions are complex, and no single project can prove a case for a particular policy direction. However, my capstone project provides at least some evidence to support these policy directions in informal education.

Limitations

My capstone attempts to use a podcast, website, and electronic newsletter to address the research question *How can online tools be used to disseminate best teaching practices among informal educators?* As I have discussed, these three media are well-suited to the task. For educators, the World Wide Web is ubiquitous. A Pew Research poll found that “92% of teachers say the internet has a ‘major impact’ on their ability to access content, resources, and materials for their teaching.” (Purcell et al., 2013); another study notes that 46% of Americans listen to at least one podcast in an average month

(Edison Research & National Public Radio, 2022). These surveys imply the project has the potential to reach a large audience of informal educators.

Even so, in completing my capstone, I recognized that my project has certain limitations when it comes to addressing the research question. First, podcast production represents a steep technical learning curve, and low-quality podcasts can dissuade potential listeners, thus rendering them less effective as dissemination tools. Second, many informal educators do not consider themselves to be part of a community of practice with those from different content areas, so they may not turn to such online tools to share ideas. Finally, the podcast, website, and newsletter media might not stand out enough to attract an audience already saturated with electronic media inputs. I will discuss these three limitations—the medium, the community, and the approach—in this section.

Challenges of the Medium

The first limitation of my project emanates from the fact that to develop stimulating podcasts and websites requires advanced skills and training. My research into podcast production emphasized that a basic production quality is necessary to build an audience: “What you need first and foremost is an audience, and what that audience needs is a quality show” (Green, 2015, p. 38). To some extent, I was able to leverage my prior experience with online tools as well as train myself in rudimentary audio engineering. But as I immersed myself in the project, I discovered viscerally why such undertakings typically require entire teams of producers, marketers, and technical staff. I am only one self-trained producer, and although I did a creditable job, the podcast and website may strike its potential audience as below professional quality.

Challenges of Community

Another limitation is that many informal educators do not consider themselves to form a coherent community. As I discussed in the [Recruitment](#) section, many of the informal educators with whom I spoke did not express an affinity with those who teach different content areas. Wenger (2008) notes that “Some configurations are too far removed from the scope of engagement of participants, too broad, too diverse, or too diffuse to be usefully treated as single communities of practice” (p. 126). One of my foundational assumptions was that all informal educators—whether music teachers, art museum docents, or field naturalists—share common characteristics. Although my literature review demonstrated the truth of that commonality, many practicing informal educators may not have entertained the idea that their community is so broad as to include everyone from music teachers to gymnastics coaches to museum guides.

Challenges of the Approach

The final limitation of my project design grows out of the use of a popular media format, podcasting, rather than a rigorous academic approach: the results are not comprehensive. A systematic analysis of the informal education problem space would have illuminated common experiences and challenges across the discipline. In contrast, my conversational approach may limit the results to the population of informal educators with whom I was already acquainted or could recruit without difficulty, and, moreover, those who feel safe recording their conversations with a stranger.

First, the population of podcast guests was notably biased toward people who resemble me. Most of my conversation partners were outdoor or science educators, as I am; even more problematic, most of them are white, non-Hispanic Americans, as am I.

Once I noted the guests' homogeneity, I intentionally recruited as much as possible outside my own background and, in the end, found many guests with different fields and intersectional backgrounds from my own. Nonetheless, I acknowledge my inherent bias that I failed to entirely avoid. Even where I did, it is reasonable to assume that some potential guests from marginalized cultures might have turned down my interview requests because they are understandably wary about how they would be represented in the final product.

Another limitation of the podcast approach is that many potential audience members simply have no more bandwidth for online inputs. Humans can only take in a limited amount of information. Podcasts, though popular, may present more than a busy professional has time to enjoy.

Similarly, while online media like websites and podcasts are *efficient* delivery media, they are perhaps not the most *effective* way to reach educators. Teaching is an interactive profession; correspondingly, teachers frequently choose in-person learning experiences. A remote, asynchronous medium like podcasting might not suit many teachers' learning preferences.

Conclusion

As I have shown, my capstone project has some significant limitations, such as the complex podcasting medium and target audience diversity. Nevertheless, online tools can be a valuable support for an informal educator's professional growth by providing access to a body of practitioners. In the next section, I discuss how future research into pedagogical podcasts might explore the boundaries of that connection.

Future Research

The preceding section discussed potential limitations of a podcast and website in exploring the research question *How can online tools be used to disseminate best teaching practices among informal educators?* Now, I will discuss how future projects might overcome those limitations by further developing the proposal that online tools can be used to launch and support communities of practice among informal educators.

My podcast conversations demonstrated that many informal educators rely on the past practices of their own institutions. At the Cabrillo Marine Aquarium, for example, educators rely on a physical call-and-response technique invented by their founder in 1959 and altered little since then (J. DePompei, personal communication, September 6, 2022). Similarly, the Tellus Science Museum in Georgia presents scripted programs in much the same way as when they were founded (K. Yeomans, personal communication, September 26, 2022). To counteract this institutional inertia, future research could catalog and categorize the teaching strategies employed by informal educators. Much like my podcast, such a database could facilitate discoveries by diverse and far-flung teachers of techniques used in other settings. Furthermore, a systematic survey of the field would surpass my conversational approach, providing invaluable data for researchers and academic training programs.

Another potential area for new research is the appropriate scope for informal teachers within the broader education system. Many of my conversations touched on ways in which informal educational institutions provide value as an adjunct to schools. One science educator who does classroom visitation programs noted that “Not all elementary school teachers have trained in science ... so we are the external experts” (B. Sobol, personal communication, September 28, 2022). Her observation suggests that

there might be content areas in which informal education is more suitable than classroom instruction. That informal educators are more successful at conveying certain topics is anecdotal; therefore, rigorous research into how informal and formal education dovetail could define those boundaries.

Conclusion

My project hints at future directions in informal education research that would help to define the field itself. Most teachers with whom I spoke did not see themselves as an affinity group, although both my literature review and my conversations exposed commonalities of experience among informal educators. Future research could position informal education as a unified profession with shared interests.

Such shared interests are prerequisite to the organic development of communities of practice. Diverse educators require a common goal before they make common cause. The next key step, therefore, is communicating the outcome of this capstone to the broad population of informal educators. I will describe those communication efforts in the next section.

Communicating the Project

My capstone project—a podcast, website, and electronic newsletter—centers on communications media. This section will describe ways in which I will leverage those and other tools to spread my message widely and address my research question *How can online tools be used to disseminate best teaching practices among informal educators?*

The first and most important communications tool for my capstone is the podcast itself. Podcasts can spread by word of mouth; as educators learn of the project, some number of them will tell their colleagues. At the second order, I made (and continue to

make) many telephone and online contacts as part of my guest recruitment, and those communications raise awareness about the project. These two direct pathways are the first communications tool that will spread information about the podcast.

Another means by which the podcast's message will spread may come from the podcast guests themselves. As each episode releases, my conversation partners often send a link to their own constituencies, such as their students, colleagues, and the organizations where they work. That dissemination drives traffic to the podcast itself and increases the show's reach.

Finally, the online ecosystem of podcasts includes mechanisms for cross-promotion. I have listed *the Classroom Beyond* on several podcast indexes, such as Apple Podcasts and Spotify, using key phrases of interest to my audience. Thus, educators searching for topics like *museum education* or *naturalists* can encounter the show. Similar mechanisms catalog the website itself. Traffic thereby flows to the podcast when internet users search for those terms.

Conclusion

In short, as an online dissemination project, my capstone has many methods of communicating with and broadening its audience. Since new online tools are easy to assimilate, I can adopt new communications strategies such as, for example, social media platforms, if they appear useful. By communicating the project and continuing to have conversations with informal educators, I hope to broaden the podcast's reach and, in turn, impact the profession. I will discuss those impacts in the next section.

Impact on the Profession

So far in this chapter, I have described my learnings while creating a podcast, website, and electronic newsletter for informal educators. After connecting my experiences to my literature review, I described how I am communicating these discoveries. In this section, I will discuss how I hope my project will benefit informal educators.

As I have described, the informal educators I interviewed for the podcast often work in spaces with little direct connection to other members of their profession. Having limited input from outside professionals, they engage in their work following the traditions of their own institutions. As Wenger (2008) and others describe, affinity groups organically develop into supportive communities of practice when given a means to do so. By connecting disparate professional informal educators, my podcast and its associated website will facilitate connections between colleagues who would not otherwise have access to one another.

Connections benefit those who share a profession but not geographic proximity by making them feel included within an affinity community. My project allows teachers to convey best practices around the ways they go about engaging and informing their audiences. The podcast and other online tools can be the conduit by which informal educators connect even when separated by time and space.

Conclusion

By creating both a sense of larger cohesiveness among informal educators as well as disseminating practical techniques between institutions, my podcast and website can promote a community of practice for the field. If those two positive outcomes happen,

they will provide one basis for answering my research question, *How can online tools be used to disseminate best teaching practices among informal educators?*

Summary

Chapter Review

In this chapter, I engaged in several closing activities to address how my capstone answered my research question, *How can online tools be used to disseminate best teaching practices among informal educators?* First, I described my learnings during the capstone process. I revisited the literature review, connecting the research on topics such as the context model of learning to my conversations with working professional educators.

Those connections between research and practice led me to describe three specific policy implications my project has on my field. Finally, I described how I am communicating my findings to my colleagues and how the project can be a benefit to them as individuals as well as to the informal education profession as a whole.

Capstone Conclusion

The information revolution of the past three decades seems predominantly a commercial phenomenon: retail websites provide fast delivery of any product imaginable and social media conglomerates package personal information for sale to advertisers. Alongside those developments, however, the internet has hosted some movements that allow people to share on a personal level, unmediated by major corporations—what might be termed the *nonprofit internet*. The first of these movements was the web log, or *blog*: online diaries that allowed people to connect with members of affinity groups around the world, be they new mothers, architects, or, of course, teachers.

The podcast represents the current decade's democratizing thread within the commercial cloth of the internet. These short recordings can be produced with no more equipment than a smartphone and rudimentary technical skill. Any group of like-minded people can share their ideas in audio form with very few barriers. And while advertisements and sponsorships have begun to nudge podcasting toward commercialization, the medium retains its grass-roots universalist nature: anyone can make a podcast, and anyone can listen.

Through my research and professional experience, I determined that informal educators represent an affinity group that would benefit from the type of support engendered by this direct exchange of ideas: the community of practice. Informal educators often face similar demands to one another yet lack the established learning networks that are commonplace among classroom teachers. The advantages of making community range from the practical—learning how an educator faced a challenge and adapting their solution—to the emotive—the gratification of belonging to a broader community of professionals.

As I uncovered during my literature review, such communities are of pragmatic utility, but they also confer a subtle and hard-to-measure sense of connectedness to their members. Any professional benefits from a community of practice. That benefit is especially acute for informal educators, whose practice must adapt daily, indeed, at times hourly, as they encounter new students. For such people, having access to like-minded professionals to serve as mutual sounding boards would be invaluable.

As Wenger (2008) teaches us, communities of practice are not willed into being but instead spring up, organically. However, for them to arise requires open

communications channels. Connections between professionals can only spontaneously develop if the pathways between them are cleared and ready. It is my sincere hope that my podcast, website, and electronic newsletter will serve as such a conduit, facilitating a broad conversation about and among the worldwide community of informal educators to which I am proud to belong.

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Appendix A

Conversation Guide

This guide summarizes the podcast project's aims:

- Create a community of practice among informal educators
- Share ideas about what works well for each of us
- Inspire conscious reflection about our unconscious assumptions

Weiss (1995) suggested the form of this guide. In *Learning From Strangers*, he describes the interview guide as a brief reference used sparingly during research conversations. I was inspired by this idea of Mills (2007):

I often ask teachers to reflect on what they do in their schools and classrooms; that is, what are the assumptions they take for granted in their schools and what are the origins of those practices? (p. 18)

I reproduce the guide itself in Figure 3, below.

Figure 3

Reproduction of the Podcast Conversation Guide

Podcast Conversation Guide
<p><i>Topics</i></p> <p>Consider these general topics when conducting a conversation. This project is about engagement and best practices, so it is not necessary to cover every topic; follow the thread of interest.</p> <ul style="list-style-type: none"> • Describe your teaching setting. What sort of institution is it? Do you work with youth, adults, or both? • What's a typical teaching day like? • What balance do you hit between telling stories and giving facts? • How did you come to work in informal education? Were you a classroom teacher? Scientist? Interested layperson? • If you could, what advice would you give yourself on your first day? • Have you overcome any big teaching challenges? • What do you hold to be your philosophy of teaching, or a sacred teaching practice? • Why do we do what we do? • Got a favorite teaching trick? That factoid that always gets their attention? • Do you ever tell jokes? And if so, can you tell me one? <p><i>What's the best way to...</i></p> <ul style="list-style-type: none"> • start a class • engage with a disengaged class • do whole-group instruction • teach a subtle science concept • figure out what a class has already learned

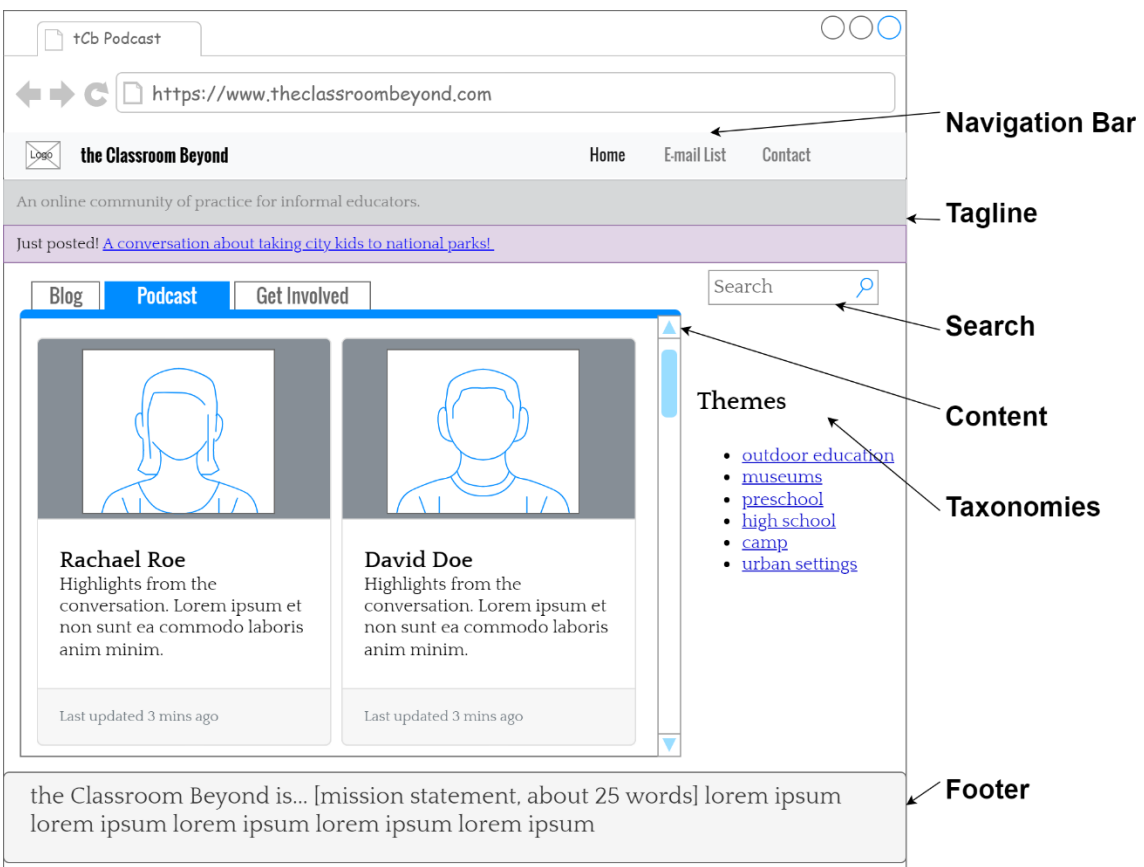
Appendix B

Home Page Mockup

This mockup of the home page shows represents the portal into the project for visitors. Important portions of the website are linked directly to the page or available through search. I describe each portion in the section that follows the figure.

Figure 4

Home Page Mockup



Navigation Bar

Provides easy access to site components and functions like contact information.

Tagline

Identifies the site's purpose and can contain time-sensitive announcements.

Search

Allows users to enter ad-hoc text or keywords so they can locate content. A user could search by a guest's name, for example.

Content

The content section displays information cards for blog posts and podcasts, starting with the most recent. Each card has an *image cap* (a picture that identifies who or what the post is about), a brief description of the content, and a link to the content page.

Taxonomies

Links to thematically grouped pages.

Footer

Presents the mission statement as well as any necessary administrative information or links, such as copyright information or a privacy policy.