

Chapter 11

The Hidden Curriculum of Public Engagement for Creative Methods of Instruction



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Introduction

Science communication and public engagement serve a multitude of purposes—from marketing, recruitment, widening access, to civic responsibility for the translation of knowledge from academic disciplines to the public domain [1]. There are a range of different public engagement methods, which can be adapted for various audiences. Creative approaches to teaching and learning translate well to outreach events due to their innovative nature and wide appeal, granting access to domains of knowledge or learning that are often restricted. Educators engaged in creative approaches to teaching may be asked to deliver outreach events. Though advice exists regarding the practical considerations of public engagement in the sciences, little guidance exists in reference to the sociocultural implications and considerations of outreach activities. For example, the lack of representation amongst outreach facilitators and their assistants, such as life models; the physical spaces in which events occur; who can access outreach events and how this relates to equity; and the tacit signposting regarding what you communicate, and how.

This chapter will consider the tacit messages of public engagement, focusing on how these manifest in creative approaches to scientific outreach. We will illustrate these tacit messages—which we frame as the *hidden curriculum*—in action by discussing case studies grounded in our practical experience of public engagement.

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Acknowledging the hidden curriculum of outreach represents a new paradigm for public engagement, as it is not a current focus in contemporary science/medical education public engagement literature. At the end of this chapter, we offer practice points for interested educators and practitioners that synthesise our main insights from engagement with the literature and our lived experience in this area.

What Do We Mean by Public Engagement and Outreach?

The terms outreach and public engagement are often used interchangeably. However, there are fundamental differences. Public engagement describes the many approaches in which the activity and benefits of higher education teaching and research activity can be shared with the public for mutual benefit. Examples might include roadshows, community engagement, public lectures, participatory arts, or science festivals. Public engagement can, in theory, happen anywhere. Working within the community is at the core.

Many universities advertise the benefits of public engagement to their employers. For example, the universities in the United Kingdom (UK) purport the benefits of public engagement to include the potential ability to educate, inform, and inspire members of the general public, school students, and potential students. Such events contribute to a vibrant, creative, and inclusive environment for university staff, students, and visitors. They enable universities to position themselves intellectually, encourage knowledge dissemination and exchange, inform, and facilitate interdisciplinary working, inform and educate the public about the work of universities, inspire the next generation of researchers, enhance teaching and learning, and increase and demonstrate the university's impact on society and the economy. What is also clear, is the advocacy of the personal benefits to staff if they chose to engage, namely opportunities to develop transferable and career-enhancing skills.

Further, public engagement is often posited as a mechanism by which universities can demonstrate accountability in the use and impact of public money used to deliver research. Institutions and individuals contributing to public engagement contribute to the educational, social, and cultural development of their locality too.

'Public engagement describes the myriad of ways in which the activity and benefits of higher education and research can be shared with the public. Engagement is by definition a two-way process, involving interaction and listening, with the goal of generating mutual benefit'.—National Co-ordinating Centre for Public Engagement [2].

Outreach might involve similar activities but it has a different social mission and purpose. Outreach activity typically targets prospective students from geographical areas who have lower progression rates into higher education and with a lower

socio-economic status. The format of the activities undertaken may be similar to those used for public engagement but the audience is more targeted. Such interventions aspire to offer students insights into programmes of study, professions, or other opportunities available to them [3]. Outreach is often part of university agendas to widen participation. Outreach is most often delivered in schools or on campus, with most activities typically delivered face-to-face.

It is important to appreciate that public engagement can serve as a form of outreach activity, however, the intention is not to increase the participation of under-represented groups within higher education, as is the case with outreach. Outreach typically falls under the umbrella of admissions and social responsibility. It is not unusual for universities to have strategies for both outreach and public engagement.

Outreach includes the many ways in which universities deliver activities as part of the access and participation plans to improve access for underrepresented groups to higher education.

The Hidden Curriculum: Definition and Challenging Common Misconceptions

The hidden curriculum (HC) is a concept which has rocketed in popularity within educational literature and, perhaps, then, predictably, healthcare and science teaching within the last few decades. In the 1970s, the HC was key to understanding the popular Marxist perspectives on education, which maintained that education teaches learners to obey authority and, in doing so, reproduces inequality [4]. Within this position, the HC acts as one vehicle by which learners are taught to obey authority, and by which social norms are taught and reinforced. Within healthcare education and, more specifically, within medical education, Professor Fred Hafferty is the veritable founding father of the HC, first writing on the term with co-author Professor Ronald Franks in 1994.[5] Hafferty defines the HC as:

“...the attitudes and values conveyed, most often in an implicit and tacit fashion, sometimes unintentionally, via the educational structures, practices, and culture of an educational institution.” [6]

Simply put, the HC is the unwritten rules, values, and patterns of behaviour that students learn, and are expected to conform to whilst learning. Though powerful, the HC is not the only type of curricula that shapes student learning. The formal curriculum, which is also known as the explicit, written, or overt curriculum, also plays a large role. Though other fields distinguish between terms such as ‘explicit’, ‘written’, and ‘overt’ (and, indeed, utilise distinctions within the formal curriculum that we do not even use as terms, such as ‘codified’, and ‘manifest’), in health professions and science education, the terms are used interchangeably [7]. Given this, we will not distinguish between them within this chapter. The formal curriculum is

that which is stated as required learning for students. It can refer to curriculum documents (such as syllabi or curriculum maps), textbooks, and a variety of teaching and learning materials produced for instruction (including multimedia formats). The formal curriculum is that which will be taught and so it represents the skills and knowledge that institutions expect students to acquire (and may test them on).

The HC exists in contrast to the formal curriculum, as an ‘other-than-formal’ type of curriculum (other types of other-than-formal curriculum include the null curriculum, and experienced curriculum). Other-than-formal types of curriculum are usually tacit—that is, implied or understood without being formally or explicitly stated. What unites the types of other-than-formal curriculum is the fact that they are not formally announced by institutions or educators, and they are unintentional lessons.

A full list of the various terms associated with the other-than-formal curriculum is given in Table 11.1. We focus in this chapter on one type of the other-than-formal curriculum, the hidden curriculum, but you might see additional relevance to the variety terms presented below.

Though discussed most frequently within the context of school or higher education (hardly surprising given the origin of the term, and use of the word ‘curriculum’), we believe the concept of the HC has value beyond traditional conceptions of education. In this chapter, we explore how the HC can help us process and challenge some of the barriers we have experienced whilst engaging in outreach events or activities. In order to ensure we explore the relevance of this concept thoroughly, it

Table 11.1 Definitions of terms associated with the other-than-formal curriculum

Term	Definition
Hidden curriculum	The unwritten rules, values, and patterns of behaviour that students learn, and are expected to conform to whilst learning.
Informal curriculum	Understandings of how things are done, versus how things are supposed to be done in accordance with rules or policies.
Null curriculum	That which isn’t taught, said, or done. Can send messages to students regarding the importance (or un-importance) of content.
Experienced curriculum	The learning actually experienced by students. What the learner absorbs through their engagement. Sometimes referred to as the learned curriculum.
Actual curriculum	The curriculum which is actually carried out. Might be identical to the formal curriculum (though this is rare), and might include the hidden curriculum.
Curriculum in action	Synonymous with the actual curriculum, the curriculum actually being provided.
Latent curriculum	Synonymous with the term hidden curriculum. Latent means hidden or concealed.
Peripheral curriculum	Sometimes known as the collateral curriculum. Designed intentionally to allow students opportunities to learn about concepts, ideas, and principles peripheral to the content being directly taught. Though learning outcomes are planned, they are not made available to students. A planned form of other-than-formal curriculum.
Unintended curriculum	An unplanned lesson or learning that happens during formal curriculum delivery. Not hidden as messages may be explicit, but unintended in that it deviates from the formal curriculum accidentally.

is necessary for us to briefly detail what might be counted as the hidden curriculum (i.e., what sort of attitudes and values might be implicitly conveyed by education), and consider some of the debates surrounding the use of the term, to clarify the way in which we have conceptualised and employed the HC within this chapter.

To illustrate what we mean when we say ‘HC’, we are going to discuss a piece of our own research which explored how the HC of medical school impacted medical students. We have chosen to discuss this research as it illuminates the multiple and varied ways the HC manifests within medical education, without focusing on outreach specifically. We will consider how the hidden curriculum manifests within outreach activity in a later section of this chapter. We hope that by first offering a broader example of how the hidden curriculum manifests within medical school environments, understanding of the concept will be enhanced. To investigate what factors beyond the formal curriculum influenced medical students’ experiences of clinical and educational settings, we conducted focus groups with 39 medical students at one UK medical school [8]. We also interviewed 14 faculty members across medical schools to triangulate our data. We found that medical students focused largely on the influence of the hidden curriculum on professionalism and professional identity development. Within their accounts, the hidden curriculum influenced professionalism and identity in a variety of ways including through role modelling, organisational culture, stereotyping, and dress code. Though students largely considered the hidden curriculum negatively, and expressed concerns that it could be leveraged by institutions as a form of organisational control, some noted that experiences of the hidden curriculum (both positive and negative) could aid identity development by helping students become familiar with professional norms, and form opinions regarding the type of professional they wished to become [8].

There are three core messages relevant to this chapter that can be gleaned from our prior research in this area. (1) The hidden curriculum manifests in a multitude of ways; (2) The hidden curriculum is often negatively perceived as a vehicle for enforcing outdated or biased professional norms; and (3) Though perceptions of the hidden curriculum are often negative, it is ubiquitous and can add value, given appropriate interpretation of the norms and values students are presented with. These findings support the research we have previously discussed but go further to illuminate the ways in which unwritten rules, values, and behaviours are communicated to learners, and how the expectation to conform to these norms is perceived. This is a critical development to the hidden curriculum concept that we will draw on within the next section of our chapter, where we consider how the hidden curriculum manifests in outreach.

How the Hidden Curriculum Manifests in Outreach

As previously delineated, we know that the hidden curriculum within medical school manifests through role modelling, organisational culture, stereotyping, and dress code. As educational events, there is a hidden curriculum—unarticulated and

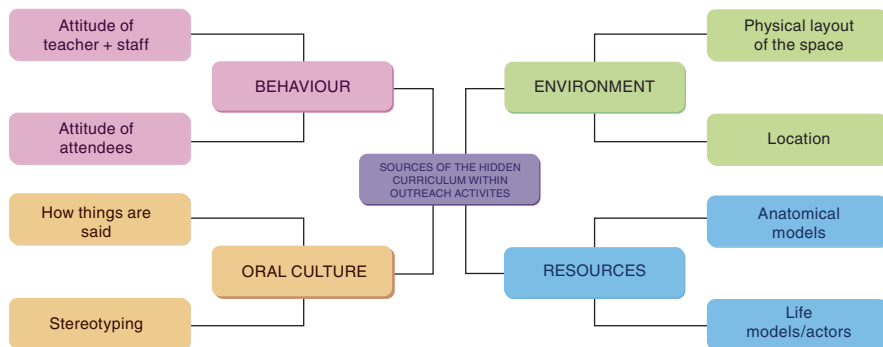


Fig. 11.1 Sources of the hidden curriculum within outreach activities

unacknowledged learning—associated with outreach activities. Yet, the context in which outreach occurs is different, and so how the hidden curriculum manifests is, in our experience, also changed. In Fig. 11.1, we offer insight as to the various sources of the hidden curriculum in outreach activities. This figure was created both through reflection on the literature in this area, and our own experiences as educators involved in outreach.

In our case studies later in this chapter, you will see these sources of the hidden curriculum in action. Here, we discuss the broad category of these sources to offer a foundation for these considerations. We have divided the sources of the hidden curriculum within outreach into behavioural sources, environmental sources, resources, and oral culture.

Behavioural sources of the hidden curriculum are what people say and do, how they act. Within outreach, the attitude (and the values and opinions this communicates) of the teacher or facilitator is critical, as are the attitudes of any associated or affiliated faculty and staff. The attitude of attendees also plays a role—though you hope that by attending an event, an attendee is interested and engaged with your outreach topic, experienced facilitators will know that attendees bring their own (often strong) thoughts and opinions on a topic that can influence other attendees and the overall delivery of a session.

By environment as a source of the hidden curriculum, we mean the physical environment (i.e. space, such as the room within a venue) and geographical location of an outreach event. How you choose to configure a room's layout tells attendees a lot about what you expect from them within a session (e.g. are the tables circular, fostering discussion amongst participants, or are they organised in rows, a style more typical of a lecture?). Further, walls talk, and it's important to consider what messages the venue your event is hosted in might send to your attendees. Within medical education, research shows that building imagery (e.g. pictures, portraits) can propagate stereotypes of how doctors should look (i.e. most imagery within medical schools has traditionally been of old, white men) [9]. Similar

considerations are important within private venues. Geographical location might also send messages about who is welcome to attend, given that some locations are less accessible than others.

Resources acting as a source of the hidden curriculum are evident within both of our case studies later in this chapter. Recent conversations regarding decolonising health sciences curricula have focused on the lack of diversity within anatomical models including cadavers, life models, diagrammatic representations, technological representations, and plastic anatomical models or simulators [10]. This lack of diversity sends tacit (but strong) messages regarding what is perceived as the norm within medicine and outreach and perpetuates underrepresentation.

Finally, we have identified oral culture as a prominent source of the hidden curriculum within outreach. Oral culture is a term most often applied to societies without a written tradition, ‘*in which intergenerational cultural transmission of values, attitudes, and beliefs is by word of mouth (including through myths)*’ [11]. We use the term oral culture here to highlight how what a facilitator, staff, or participants say within an outreach setting can communicate values, attitudes, and beliefs. Stereotypes might be present within the examples or anecdotes provided within the session, which serve to propagate biased attitudes or beliefs.

What Are Creative Methods of Instruction?

Creative methods of instruction within outreach are particularly rich sites in which the hidden curriculum acts. Creative methods of instruction are engaging and typically offer attendees the opportunity to actively participate. Some examples of low fidelity methods utilised within science outreach include art-based approaches, for example anatomical body painting, life drawing, and low fidelity modelling of structures [12, 13]. Higher fidelity methods include sculpture, performance, simulation, or virtual reality. These instructional, or participatory methods, may involve interactions between facilitators and attendees, or between other attendees. Figure 11.2 exemplifies some of these low fidelity approaches such as clay and edible modelling, drawing, and painting.

Finn and colleagues [12, 14–23] have described numerous benefits to using creative types of instruction, such as the fun, interactive nature, the development of empathy, the educational benefits on memory when learning through the use of vivid colour, or the opportunity to diffuse the formal setting when discussing sensitive topics. However, caution must be taken not to use such creative approaches in an attempt to ‘teach by stealth’ [14], after all, the HC is hidden by its very definition.

Using children’s reusable modelling dough, for example can afford a number of benefits—it is inexpensive, easily transported, easily cleaned up, only the clay and

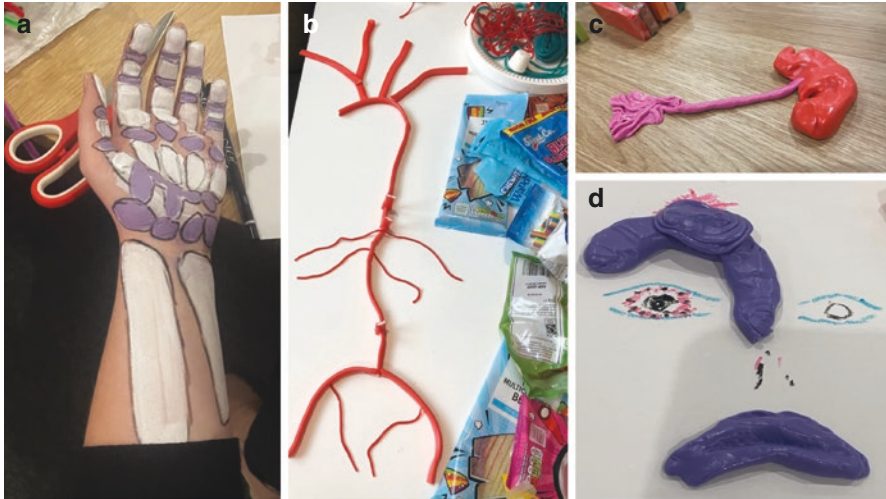


Fig. 11.2 Examples of creative approaches: (a) bones of upper limb painting, (b) edible arteries, (c) kidney modelling, (d) drawing/modelling of experiencing a migraine



Fig. 11.3 Examples of the use of children's reusable dough for creative approaches to instruction

instructions are required, the activity can be standalone too [16]. Further it can be adjusted for age and ability, and used with a range of other models or activities for scaffolding or more complex activities. Figure 11.3 depicts examples of the use of children's reusable dough.

Case Studies

We now offer two case studies in which we integrate our own experience as educators with relevant theory in this area to provide worked examples of hidden curriculum analyses. We hope that you will use these case studies to reflect on how the hidden curriculum might manifest within your outreach event, and how you might challenge any negative impact of this manifestation.

Case Study 1: Body Painting

You are attending a public engagement event hosted by a science museum. You advertise to students to volunteer to assist, and ask for a model to have their thorax painted. The event is an interactive evening at the museum, with catering outlets open serving food and alcoholic beverages. You have paid a small fee to attend. Higher educational, health services, and industry partners have a range of activities and exhibit for you to browse at leisure. A team of medical students, graduate students, and anatomists are hosting an anatomical body painting station. You are able to participate in a hand painting activity. Paints and instruction sheets are available, as well as assistance from graduate (doctoral) and medical students. In addition, anatomists are doing a live demonstration where they are body painting thoracic anatomy on a model. While you are watching the painting, the male model is approached by other members of the audience who photograph him and touch his body without asking permission. When asked to refrain they remark, *‘what does he expect, he’s topless in public’*. This is in front of all participants. They continue taking their photos which later appear on social media. The event is well attended, and there is a subsequent buzz on social media when images of the activities appear.

Anatomy lends itself to science engagement events. The subject is compelling, after all—everyone has a body. Anatomy has long been considered taboo, in part due to its dark history with many anatomical discoveries being made through immorally obtained cadavers and outlawed practices. These include grave robbery, vivisection, slavery, or Nazi war crimes. It is, in part, due to this history, as well as sensitives including death, sex, and reproductive organs that are associated with anatomy, that delivery of events must be well considered and appropriately framed. There are examples where public activity, such as Gunther von Hagens, was being branded disrespectful and a ‘showman’ for what was perceived as an overly theatrical dissection demonstration on British television. There are a variety of potential tacit messages pertaining to respect for donors, death, and views on mortality that are inferred when relaying anatomical content—even when living anatomy is the focus.

Concerning our case study, there are many positives. Firstly, the interactive nature of the session has many benefits—it can diffuse the formal delivery of scientific content and any anxieties people might have regarding participating if they have little or no knowledge of anatomy. Secondly, the activities are fun and engaging. They spark interest and, when events go well, act as marketing tool for institutions. There are also opportunities to widen access, promote positive role modelling, and exchange knowledge.

With respect to the hidden curriculum, there are a number of potential implications. The messaging that someone might pick up with respect to consent, sharing and imagery, and touch is very important [24, 25]. In the case presented, behavioural correction is essential. Signposting the issue to the perpetrator(s), the students, and bystanders goes some way to ensure that positive behaviour is role modelled and that negative messaging does not perpetuate. The importance of respect and consent, for example, can be easily signposted in order to ensure that negative messaging does not persist. Teachable moments are possible, linking the importance of respect for models with the teachings in health professions education about respecting body donors, patient dignity, and of course the sharing of imagery. Alcohol also introduces another element, behaviours and attitudes can change for example. Team briefings detailing concerns and plans for any potential scenarios are key here. Having such plans in place helps from a practical escalation perspective, but also signposts for volunteers that their dignity and comfort are of paramount importance.

Implicit biases may be at play, these are the unconscious attitudes and stereotypes that any stakeholder in the event could be exhibiting. A male model was demonstrated upon, even though a volunteer and there may be a self-selection bias at play, outwardly there is potential for messaging that ‘a male thorax is easier to deal with’ and a host of other gender related implications is possible.

Case Study 2: Cardiopulmonary Resuscitation Events

You are a final year medical student taking part in a cardiopulmonary resuscitation (CPR) marathon, which will be hosted in your local supermarket, to raise money for a charity pioneering cardiac research. You are going to take part in the marathon with five other male final year medical students. You went to sign up with your female friend, but the medical student in charge of organising the event discouraged your friend from signing up, stating ‘*It’s very physical, a CPR marathon, you need decent biceps, we don’t want to fail*’. Your medical school has loaned you a Resusci Anne mannequin to use during your CPR marathon.

CPR marathons are commonly organised by medical students. Hopefully, if you have experience of these events, they are not as problematic as the case study we have outlined. Take a moment to pause and consider how the hidden curriculum relates to this case.

There are many ways in which the hidden curriculum is manifested even within the planning stage of this outreach event. Firstly, the attitude of the medical student in charge of organising the event discriminates against women—this is unacceptable, and propagates the biased view that only men are strong enough to sustain CPR efforts. This is a form of descriptive gender bias, where negative assumptions are made about women based on stereotypes [9]. During the marathon, members of the public will now only witness male medical students performing CPR, and so may also, unknowingly, adopt this view unconsciously.

Perhaps more subtle is the hidden curriculum in regard to the resources planned for use during this event. Resusci Anne is the most popular CPR doll available commercially within the UK. Two versions exist—a torso, and a full body version. If you have ever received any sort of adult life support training, you will likely be familiar with Resusci Anne. Astute readers who have experience performing CPR on this model might notice that the anatomical features of the model (which is male-presenting, given that the model does not have breasts) and the name of the mannequin (which suggests that the mannequin is a woman—indeed, the face of the mannequin was taken from the death mask of an unknown woman drowned in the river Seine, l'inconnue de la Seine) are mismatched [26]. We offer an important proviso here that we are associating breasts, a biological feature, with gender, a social construct, and so would highlight that not all men will be without breasts, and not all women will have breasts [27]. We make this association as it is commonly a correct one at large within society and because of the fact that women are 27% less likely to receive CPR than men if they collapse in a public place [28]. A recent study by the American Heart Association explored possible reasons underlying this discrepancy and reported several influencing factors including the perception that breasts make CPR more challenging [29]. The use of Resusci Anne dolls which are labelled with a traditionally female-presenting name but provide only a traditionally male-presenting torso to rehearse CPR on propagates gender-based inequalities within healthcare (specifically, here, within the administration of CPR). Using a Resusci Anne doll within a public-facing outreach event communicates that men are the norm to attendees. This propagates androcentrism—where *'men are considered typical members of the human category, whilst women are deviant'* [27, 30]. Androcentrism is rife within medicine, and medical education [31], and we should be seeking to challenge this norm, rather than propagate it. There are likely to be few opportunities to challenge the presentation of the Resusci Anne doll within this case study's context—the audience are supermarket passers-by and so there will likely be little-to-no opportunities to provide information to challenge what the passers-by witness from afar. Unfortunately, as it stands, this case study within its current context risks demonstrating that the life-saving skill of CPR is best only performed on men, which may deter onlooker's future CPR efforts for those with breasts.

Considerations for Events

Beyond the hidden curriculum, there are many considerations required for outreach and public engagement events. One model, adopted from psychology, that could be useful is Maslow's hierarchy of needs [32]. Maslow's hierarchy of needs is a theory of human motivation. It states that five categories of human needs dictate an individual's behaviour. Humans are motivated to accomplish their goals. Maslow argued that achieving goals such as allows humans to meet their individual wants and needs. Such needs are typically mentally prioritised in order of importance, meaning that less immediate needs have to be met before more important needs can be satisfied. Human actions are focused around meeting their low priority needs before moving on to reach high priority needs. Maslow's model is often applied to educational contexts. In Fig. 11.4, an adaptation of the model is offered in which it is framed within the context of events. The participants in the model could be any stakeholder within an event, whether they are students, members of the public, facilitators, or models. Meeting the physiological needs of an individual is the fundamental principle. Achieving the higher order needs, such as esteem, can only be achieved when such basic needs are met. Our figure proposes the relevance of this hierarchy in achieving individual and organisational goals for any event. As was exemplified in our case studies, comfort and well-being are crucial. Without appreciation of the potential impact of the hidden curriculum, the higher levels of the hierarchy may not be realised.

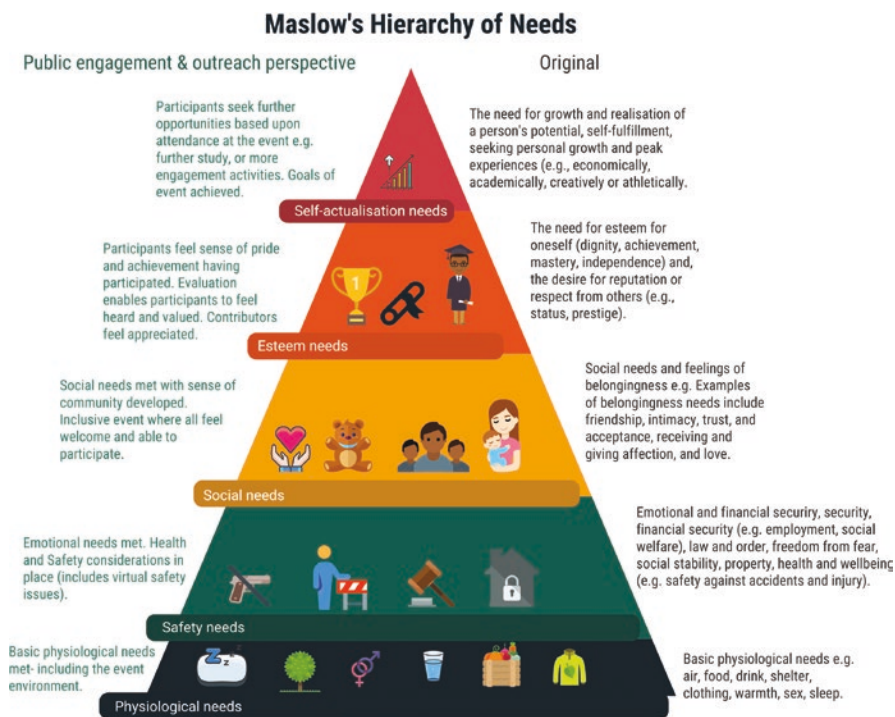


Fig. 11.4 An adaptation of Maslow's hierarchy of needs for public engagement and outreach events

Practice Points for Educators

Here we offer five practice points for educators to consider when organising and facilitating outreach and publication engagement events:

- Define your purpose, outreach or public engagement, and plan accordingly.
- Be aware of the potential hidden curriculum when planning any creative approaches—think about what tacit messaging could occur, be it positive or negative.
- Remember that the hidden curriculum is not a space in which you can teach by stealth, in part due to the fact that it could be experienced differently by everyone.
- Use Maslow’s hierarchy of needs as a framework for planning activities, in order to ensure basic and higher order needs are met.
- Enjoy your events, and always remember to evaluate and reflect.

Conclusion

Public engagement and outreach are not synonymous with each other; both serve different purposes. When planning any such event, always be mindful of the potential hidden curriculum. There are a plethora of potential tacit messages that can be hidden, even disguised within the use of creative approaches and activities. Models such as Maslow’s hierarchy of needs allow for a framework upon which to plan and build events—remembering basic needs right through to the need for participants to feel they belong and have achieved a level of fulfilment. Use of creative approaches can help build a sense of fun, community, and engagement but without monitoring, there is potential for mixed messaging. The best events involve a two-way process, involving interaction and listening, to achieve the goal of generating mutual benefit.

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