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Learners in Advanced Nanotechnology MOOCs: Understanding their Intention and Motivation

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Anytime, Anywhere (DIA2) that attempts to characterize the impact of NSF and other federal investments in the area of science, technology, engineering, and mathematics education using interactive knowledge mining and visual analytics for non-experts in data mining. DIA2 is currently deployed inside the NSF and is already starting to affect federal funding policy. Dr. Madhavan also served as Visiting Research Scientist at Microsoft Research, Internet Services Research Group. His research has been published in Nature Nanotechnology, IEEE Transactions on Computer Graphics and Applications, IEEE Transactions on Learning Technologies, and several other top peer-reviewed venues. Dr. Madhavan currently serves as PI or Co-PI on federal and industry funded projects totaling over $20M.

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Abstract

Very little is known about the specific types of learners and their various needs and intentions with regards to STEM-related MOOCs. As MOOCs become more and more popular and completion rates stay in the single digits, it is important to understand who is enrolling in MOOCs, what is motivating them to do so, and what they want from the courses. Results from a survey of 1,624 learners enrolled in three highly-technical STEM MOOCs revealed that while learners are coming from a variety of backgrounds, 64% of respondents indicated engineering or architecture as their primary field of study. In addition, 47% indicated desire to apply information obtained to an engineering project, and 29% desired to obtain a deep level of knowledge. These findings suggest that MOOCs can be marketed as professional development of working engineers and dissemination of highly technical information.

Introduction

Massive open online courses (MOOCs) are a relatively young and rapidly growing concept in online education. The term, MOOC, has been defined as "any online educational course that is available at no or minimal cost, is open to a very large number of students, and for which the educational materials and resources are freely available online" (p. 218).[1] In general, MOOCs are free of the typical educational barriers of prerequisites, fees, and hard requirements for participation in the course, creating an investment-free option to access learning materials.[2] Indeed, those who enroll in MOOCs are free to enter and leave the course with little or no commitment to course activities. Learners may choose to either fully participate in all aspects of the course, simply skim materials they find most interesting or useful, or opt out of the course entirely at any point.

Not surprisingly, the level of openness has brought about challenges for MOOC evaluation, requiring traditional course evaluation indices to be re-examined. Some have suggested that MOOC completion rates may only be relevant when interpreted in light of learner goals.[3] We further argue that completion, as an accurate index of MOOC quality, is only relevant when considered from the perspectives of learner intentions and MOOC design. In other words, if a group of learners enroll in a MOOC because they have the intention of participating in most aspects, it is important to understand the factors that contribute to their full or incomplete participation in the course. Likewise, if the content in a MOOC is designed sequentially (i.e., concepts build on each other in a particular order), yet the majority of learners are simply treating materials akin to a wiki page (i.e., skimming materials periodically for specific information), low completion rates may signal a disconnect between stakeholders' goals and user behavior. Overall, evaluation of MOOCs is far too nuanced to merely dismiss or accept traditional indices of course quality. Before appropriate indices of MOOC effectiveness can be accurately identified, we first need to understand what is valuable to learners and the goals of stakeholders (e.g., faculty who teach MOOCs, administrators at institutions that provide the resources).

Researchers have begun to investigate learners' reasons for enrolling in MOOCs and have reported reasons including entertainment, interest in a particular topic, and professional knowledge and skill development.[1] In addition, patterns of learners' usage of course material (i.e., clickstream data) have begun to be explored.[4] Still, little is known about the specific motivations and intentions of those who enroll in MOOCs and, particularly, the intentions of those who enroll in MOOCs involving highly technical engineering-related content. To more adequately design MOOCs in ways optimal for learners—especially as the numbers of MOOC providers and courses continue to increase—it is essential to better understand learner motivations and intentions for enrolling. Addressing the void in understanding MOOC learners is crucial to designing more effective MOOC pedagogies and helping the learners to achieve success.[5] Fischer asserted that fundamental to the future of MOOCs was understanding what motivates learners to meaningfully engage.[6]

The purpose of the present study is to explore the diversity and motivations of learners enrolled in highly advanced nanotechnology-related MOOCs. We ask the following questions: 1) What brought learners to the courses in which they are enrolled? 2) What backgrounds are learners coming from? 3) What are learners' goals for taking the course? and 4) What are the levels and orientations of learner's motivations for engaging in the course? Previous explorations into MOOC learners have largely focused on mean values of reported traits of entire course populations across a diverse array of MOOCs, but these values may not be particularly useful for understanding qualities of individual or specific subsets of learners. This study seeks to expand upon prior research by providing analyses beyond just mean values of various background variables through exploration of distributions and relationships between variables. Detailed answers to the aforementioned questions may be of particular interest to those who develop, teach, evaluate, or participate in MOOCs.

Instructional design of MOOCs. Tailoring instruction to the needs of the intended learners is an undeniably critical component of teaching. Smith and Ragan refer to this process as instructional design and define it as a "systematic and reflective process of translating principles of learning and instruction into plans for instructional materials, activities, information resources, and evaluation" (p. 4).[7] Further, Smith and Ragan assert that understanding the learners, which requires consideration of learners' needs and goals, is not only necessary but central to successful instructional design.[7] Regardless of educational platform, instruction cannot be appropriately designed to meet the needs of the learners and ultimately produce the desired outcomes without a comprehensive understanding of the learners.

Because high quality instructional design requires an initial assessment of the learners and the learning environment, the limited knowledge about the needs of MOOC learners is highly problematic.[8] What is known is that most learners who choose to enroll in MOOCs are well-educated, employed, and living in developed regions of the world.[5] With regard to course participation rates, researchers have found average retention rates between 5% and 15%, meaning that the vast majority of those who enroll in MOOCs do not complete the courses for one reason or another.[2,9] Greene et al.[5] found that prior level of education and expected number of hours devoted to the course predicted achievement (i.e., successful performance on course assessments) in a MOOC. Again, it is important to keep in mind that assessing learners via completion rates may not necessarily be entirely appropriate, as some learners enroll in MOOCs with no intentions of completing the course, but rather to simply gain access to the material presented in the course and to skim for what is relevant or interesting.

Although various trends have been identified within groups of learners enrolled in MOOCs, little is known about what motivates these learners—a point previously broached by multiple researchers.[5,10] Because many MOOCs are designed to attract massive groups of learners from a variety of backgrounds, and because enrollment is free of requirements, learner goals are not often assessed as part of the enrollment process.[3] Of note, one MOOC platform, Coursera, has recently added a question concerning learner intended use of a course to the participant survey, but the use of this information in terms of MOOC design is unknown. Further, while little is known about MOOC learners as a whole, even less is known about learners who enroll in advanced engineering-related MOOCs. This study examines the composition of learners enrolled in advanced nanotechnology-related MOOCs as a means of exploring this population of learners.

Motivation for learning. Fischer asserts that whether a learning environment is successful or not is largely dependent upon whether learners can learn what they want to learn, when they want to learn it.[6] In other words, a person's motivation to learn is a major driving force in creating successful learning experiences. Fischer also contends that learning materials are of nearly unlimited access to much of the world at present but that utilizing those materials in a way that results in learning requires a learner who is motivated to partake in ways that actually promote learning.[6]

Despite motivation often being referred to as a single construct, we know that people are driven to act by varying forces in various situations, suggesting that motivation is a multi-faceted and fluid construct. Ryan and Deci theorized that learners possess varying amounts of both internal and external motivations when making decisions about their behaviors.[11] Self-Determination Theory outlines these contrasting types of motivations as intrinsic and extrinsic motivation.[12]

Intrinsic motivation refers to one's inherent interest or desire to engage in a particular activity, and is considered to be free of external pressures or incentives. In other words, if one is intrinsically motivated to engage in learning, they do so because they have a natural, internal inclination to learn about a given topic and to seek novelty and challenges that will help them do so. People who are intrinsically motivated to learn value increasing their own understanding and therefore engage in learning opportunities without pressure by external influence. Ryan and Deci describe intrinsically motivated decisions as ones that "emanate from one's sense of self" (p.65).[11] For this reason, intrinsic motivation is regarded as more fruitful than extrinsic motivation for enhanced performance, creativity, and persistence.[11–13]

Though activities driven by intrinsic motivation may result in the highest quality outcomes,[11] the learning activities individuals elect to engage in are not purely motivated by personal love of learning (i.e., intrinsic factors), but also by outside causes.[11] We are often partially motivated in our decision making by external pressures or rewards. In fact, Ryan and Deci explicitly state that being intrinsically motivated to engage in learning becomes increasingly difficult as social demands and roles "require individuals to assume responsibility for non-intrinsically interesting tasks" (p. 60)—a point that may be particularly applicable to those employed in rapidly changing technical fields.[11] Motivation extraneous to one's innate impetus is referred to as extrinsic motivation. Extrinsically motivated students see learning as the means to achieving a desired outcome, rather than the outcome itself. Desired outcomes may include achieving social approval, earning a desired course grade, fulfilling a professional requirement, or avoiding consequences. Intrinsic and extrinsic motivations are not mutually exclusive, and likely both exist to varying degrees within all learners. This means that individuals differ in their levels of each orientation of motivation, possibly having more of one type of motivation than the other for engaging in various behaviors related to learning.

Background

This study focused on learners from three nanoHUB-U courses. NanoHUB-U is an online education platform established by the National Science Foundation supported project, Network for Computational Nanotechnology (NCN).[14] The highly dynamic and rapidly evolving nature of the field of nanotechnology quickly renders traditional course textbooks obsolete, [15] and the most up-to-date material is only available through conference proceedings and journal publications. NanoHUB-U combats this issue by offering short, open-access courses (typically 5 weeks in length) developed by a collaboration of experts from across the field of nanotechnology. One of the major objectives of nanoHUB-U is to significantly decrease the time between research discovery, to access of new information, and then to actual use in engineering projects for students and practitioners. Of particular interest is the impact the MOOCs have in terms of industrial users.

Methods

Data collection and participants. Researchers administered a voluntary survey during the first week of three nanoHUB-U courses: Organic Electronic Devices, Fundamentals of Nanoelectronics—Part A, and Bioelectricity. The combined total enrollment for the three courses was 22,230 learners. Survey responses for the three courses were combined, and after cleaning data for incomplete responses, a total of 1,624 learners completed the survey.

Survey. The purpose of the survey was to explore the diversity of learners enrolled in the course based on their demographics, prerequisite background, educational attainment, employment status, expectations for participation, personal goals, and levels of intrinsic and extrinsic motivation for learning. The survey included seven forced-choice items related to learners' backgrounds (i.e., education level and employment status) and goals for the course (i.e., desired grade and desired learning gains), seven Likert-style items from the Intrinsic and Extrinsic subscales of the Motivational Learning Styles Questionnaire, [16] and five constructed response items regarding learners' fields of study, what they hope to gain from the course, and what brought them to the course. The full text of the survey is shown in the Appendix.

With regards to the Motivational Learning Styles Questionnaire items, the Intrinsic subscale assessed the extent to which learners were motivated by internal factors to engage in the course, such as a personal interest in learning and a desire to be challenged by novel information. In contrast, the External subscale assessed the extent to which learners were motivated by external factors, such as pressure from a third party or a desire to outperform others. Respondents rated each of the subscale items on a 7-point Likert scale ranging from "Not at all like me" to "Very much like me".

Data Analysis. Survey responses were analyzed using both quantitative and qualitative methods. Two of the constructed-response items ("What about this topic is interesting to you?" and "What is your primary field of study?") were analyzed qualitatively through content analysis. One researcher used open and focused coding methods to analyze the topics of interest, and a second researcher used the final focused codes to obtain acceptable agreement on a subset (10%) of codes. Additionally, a single researcher applied an *a priori* coding scheme based on the Bureau of Labor Statistics Occupation Classifications[17] to analyze all responses to the question about learners' primary fields of work or study. Again, a second researcher applied the same coding scheme to a subset (10%) of the responses to obtain an acceptable level of agreement. Analyses indicated 95.3% agreement between coders and a Cohen's kappa of 0.92.

Results

What brought learners to the courses? The survey asked learners to indicate where they had initially heard of the concepts covered in their respective course by choosing one of the following options: "Coursework," "edX," "nanoHUB-U," "Personal Study," "Professional Settings," and "Other." Nearly half (46%) of respondents indicated learning about the course topics via edX, a widely-used MOOC platform (Figure 1).

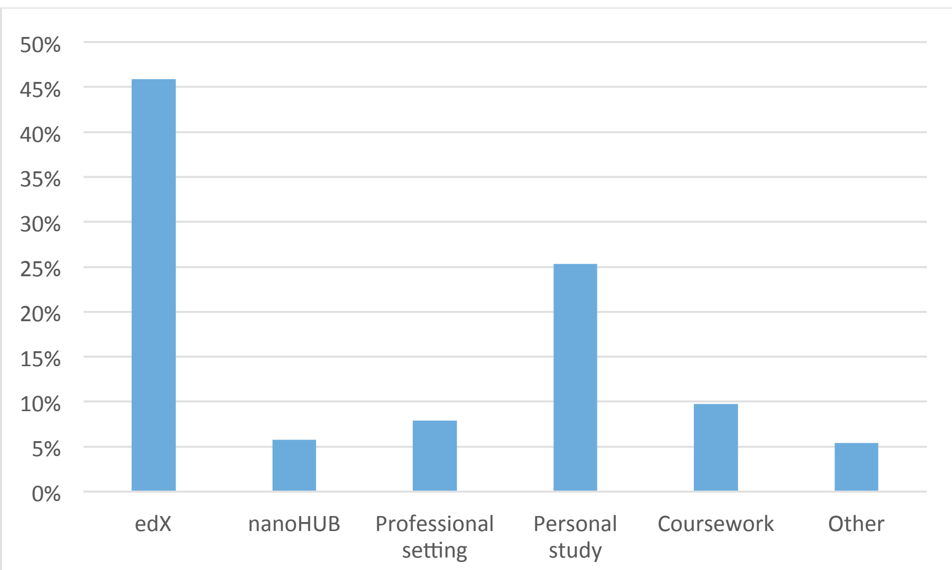

Figure 1. Source of concept for learners

The survey included an open-ended question regarding what about the topic was of interest to them. Of all respondents, 1,118 provided an answer to this item, and an open-to-focus coding process revealed 12 categories of responses. As many learners' answers included multiple ideas, many responses were assigned multiple codes. Categories of responses and their respective frequencies are reported in Table 1.

As illustrated in Table 1, the majority of learners indicated an interest in specific concepts within the broader topic of the course. This likely indicates some degree of incoming background knowledge for at least the learners who indicated specific concepts, as they would not have known concepts to identify, otherwise.

Table 1. Frequencies of categorical responses to "What about this topic is interesting to you?"

Response Category	Frequency
Specific (advanced) concepts	507
Fundamentals of basic concepts (broad interests)	324
Potential applications of topics	130
Improving the quality of lives; understanding technology's impacts	120
Improving technology, its production and its impacts	91
Importance to present and or future world or society	61
General curiosity or desire to advance knowledge or skills	47
Related to work or academics	44
Explore connections to other topics, courses, or everyday life	41
Uncertain of specific areas of interest	33
Interest in challenge, complexity, or novel concepts or topics	32
Uninterpretable responses	27

From what backgrounds are learners coming? There are several dimensions that contributed to our understanding of these learners' backgrounds, including: familiarity with the English language; prior related coursework; level of education; employment or academic status; and primary field of study. Just over three-quarters (75.4%) of respondents were non-native speakers of English, but were generally confident in their level of English proficiency. On a 7-point Likert-type rating scale, the average proficiency reported was 5.99. The distribution of English proficiency is displayed in Figure 2. While it should be noted that learners self-assessed their proficiency and responses are thus subject to bias, all respondents included in analyses were able to complete the survey in English. Information regarding specific native language, country of birth, and current location was not obtained in this survey.

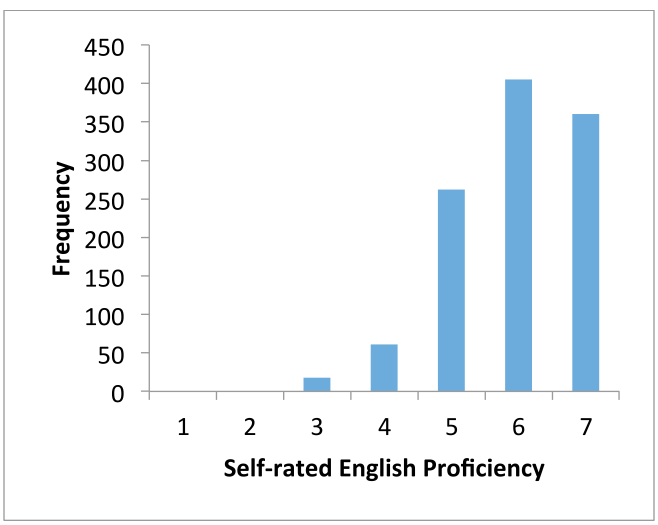

Figure 2. Distribution of English proficiency ratings

With regard to prior coursework in a related subject, learners were split nearly equally with 48.2% having previously taken a related course, and slightly over half of the learners having no or minimal formal academic experience with the topics being covered. Despite the relative inexperience with the specific course topics, the majority of learners enrolling in these courses had completed post-secondary degrees, with 78.3% holding at least a bachelor's degree. Considering that these particular courses are intended to be at the graduate level, these numbers appear appropriate. Figure 3 shows a complete distribution of the learners' levels of education.

While the majority of the learners held collegiate degrees, 69.4% of respondents indicated being either full-time or part-time students. The percentage of learners who were working full-time and seeking professional development was approximately equal to those who were neither student nor employed at 16.3% and 14.2%, respectively. These results suggest that only a small proportion of the learners were likely taking the courses for purely recreational purposes and most learners were taking the courses to supplement their educational or career objectives. The complete distribution of these classifications is shown in Figure 4.

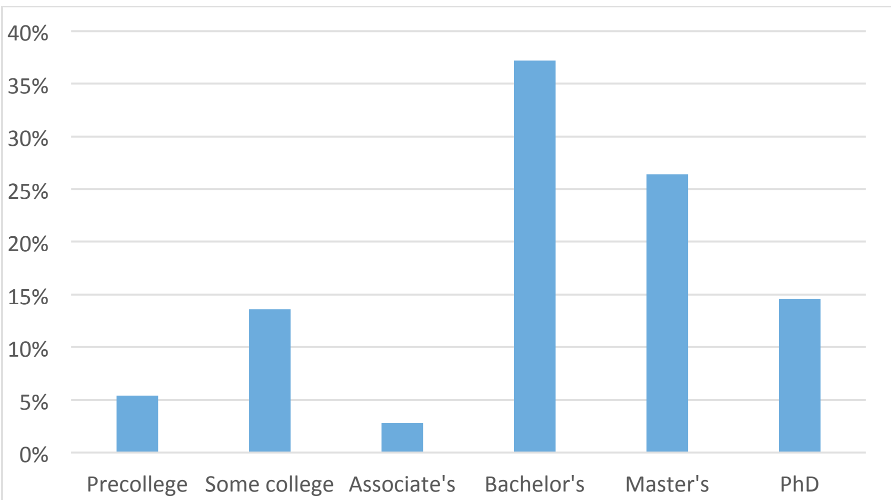

Figure 3. Highest degree or amount of education completed

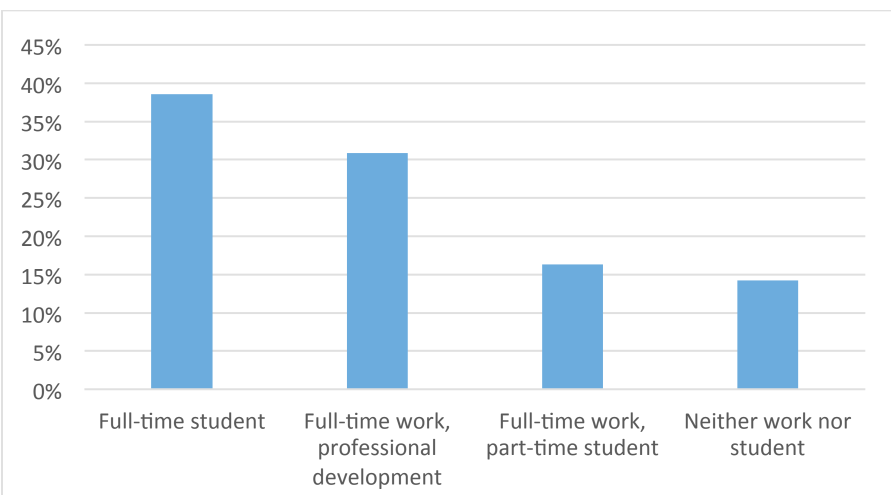

Figure 4. Learners' academic or work status

A constructed-response item was used to determine learners' primary fields of study, and classification of responses benefited from a pre-established set of codes. The researchers used major codes of the Bureau of Labor Statistics' Standard Occupational Classifications as a coding scheme.[17] It should be noted that not all responses were able to be coded using this scheme, as some respondents left this item blank or did not provide a classifiable field (e.g. constructed-response of "Research"), and some provided more than one field. Unclassifiable responses were not included in analyses, and entries from learners who provided multiple responses were coded for each field mentioned. Responses were occasionally subject to researcher interpretation, as some descriptions were insufficient for confident classification. For instance, some fields of nursing fall into the classification of Healthcare Support Occupations while others fall into Healthcare Practitioners and Technical Occupations. Thus, a constructed response of "Nurse" lacked sufficient specificity to assign a classification with absolute certainty. Similarly, a constructed-response of "Robotics" could easily correspond to a technician or to an engineer. In these cases, the researchers generally erred on the side of the more advanced field, considering the highly advanced nature of the MOOC courses learners were taking. Two researchers coded the responses to ensure consistency and appropriateness of categorization (see Data Analysis section for further details on interrater reliability). Categories and frequencies of participants' current or intended fields of work are presented in Table 2.

Table 2. Classification of Primary Fields of Study

Major Classification	Frequency
Architecture and Engineering Occupations	933
Life, Physical, and Social Science Occupations	267
Computer and Mathematical Occupations	158
Healthcare Practitioners and Technical Occupations	44
Business and Financial Operations Occupations	20
Arts, Design, Entertainment, Sports, and Media Occupations	10
Education, Training, and Library Occupations	10
Legal Occupations	4
Production Occupations	3
Transportation and Material Moving Occupations	3
Community and Social Services Occupations	1
Farming, Fishing, and Forestry Occupations	1
Food Preparation and Services Occupations	1
Management Occupations	1
Personal Care and Service Occupations	1

What are learners' goals for taking the course? While the constructed-response question about learners' interests was intended to determine what brought learners to their courses, responses were also useful in understanding learners' goals for the course in which they're enrolled. Table 1 shows that many learners had specific topics about which they hoped to learn from the course. It is unclear from this question, however, whether those specific topics were the only topics respondents desired to learn, or if they simply considered those particular topics to be most interesting. The answer to this question may provide important insight into the behaviors (i.e. participation and completion) of those learners.

In addition to the constructed-response item discussed above, two select-response items also provide insight into learners' goals for the course. The first asked learners for their desired grade (high grade, passing grade, or grades did not matter). The majority of learners indicated either wanting to earn a high grade (41.5%) or not caring at all about grades (42.3%). The remaining 16.2% simply wanted to earn a passing grade (see Figure 5). A second item asked about the desired learning gains. The greatest group of learners (46.9%) hoped to learn the material well enough to be able to apply the knowledge, while 29.8% of learners sought a deep level of understanding. Only 23.3% of learners desired only a superficial understanding of the course concepts (see Figure 6).

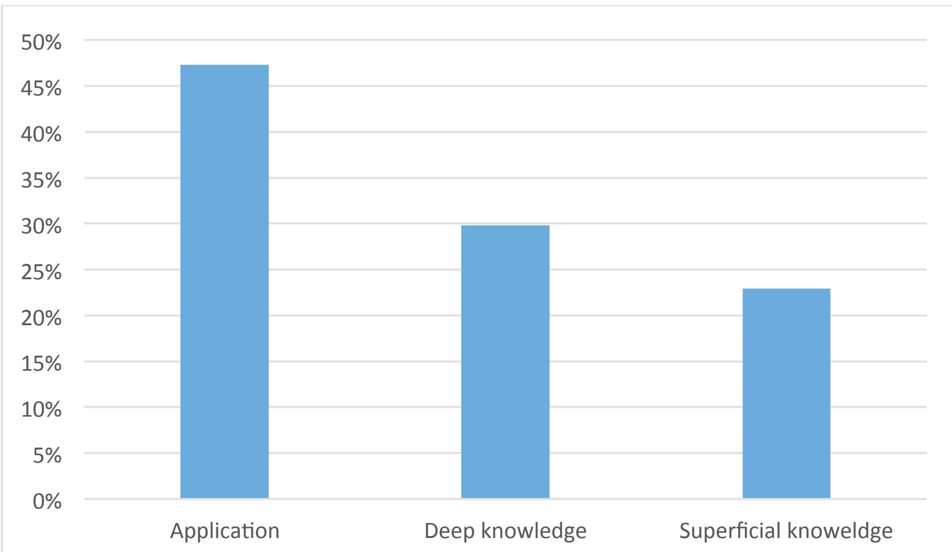

Figure 5. Percentage of learners seeking differing learning gains

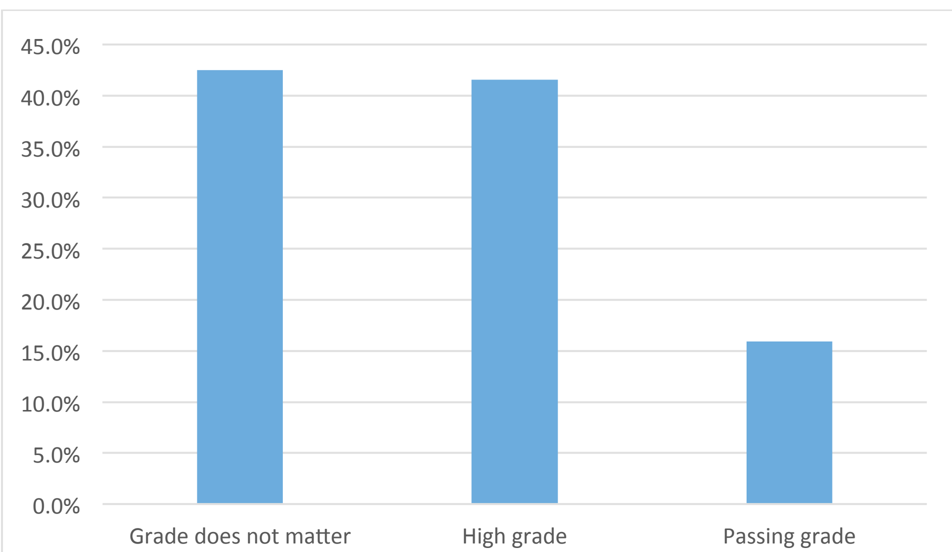

Figure 6. Percentage of learners desiring different course grades

Are learners intrinsically or extrinsically motivated to engage in learning? Using averaged responses to the three 7-point Likert-type items assessing extrinsic motivation for learning, we classified each learner into groups of (1) no extrinsic motivation (for an average less than 2.5), (2) low extrinsic motivation (for an average greater than or equal to 2.5 and less than 5.5), or (3) high extrinsic motivation (for 5.5 or greater). We applied the same process for intrinsic motivation. We then classified each of the learners in one of the nine possible combinations of these motivational orientations and levels, leading to the distribution shown in Table 3.

As depicted in Table 3, the majority of learners (68.4%) were highly intrinsically motivated, though only 19.1% of those learners were also highly extrinsically motivated. The largest subpopulation (35.3% of all learners) had high intrinsic motivation but low extrinsic motivation. Meanwhile, only 15.5% of all learners had high extrinsic motivation and only 0.7% of all learners had no intrinsic motivation. The learners' combined motivational averages indicated relatively high levels of intrinsic motivation ($M = 5.76, SD = 1.02$) and relatively low levels of extrinsic motivation ($M = 3.56, 1.73$). Paired-samples t-tests comparing intrinsic and extrinsic averages for each respondent yielded significant results ($t(1623) = 47.14, p < 0.001$), indicating more intrinsically than extrinsically motivated learners in our sample. The correlation between intrinsic and extrinsic motivation was small, but was statistically significant ($r(1622) = 0.14, p < 0.001$).

Table 3. Distribution of learners' motivational classifications

Intrinsic Motivation Level	Extrinsic Motivation Level			
	High	High	No	Total
High	210 (12.9%)	575 (35.4%)	326 (20.1%)	1111 (68.4%)
Low	38 (2.3%)	279 (17.2%)	186 (11.5%)	503 (31.0%)
No	2 (0.1%)	2 (0.1%)	6 (0.4%)	10 (0.6%)
Total	250 (15.4%)	856 (52.7%)	518 (31.9%)	1624

Note: Percentages shown correspond to the entire set of retained respondents.

Discussion

MOOCs often generate enrollment in the thousands and much remains unknown about learners' reasons for enrollment or what they hope to achieve by interacting with the MOOC materials. While much has been discussed in the literature regarding inappropriate evaluation indices, such as completion rates,[3] few studies have considered the alignment between stakeholder intended outcomes and actual results.[19] In this study, we have considered the alignment between stakeholders' intended audience and the actual users of the MOOCs. Considering a major goal of the nanoHUB-U stakeholders is to provide engineers and scientists with access to cutting edge nanotechnology information, the finding that 64% of survey respondents indicated engineering or architecture as their primary field of study is very encouraging. Much of the information provided in the nanoHUB-U courses is not available in textbooks. Our findings strongly suggest that nanoHUB-U has helped to increase working engineers' access to nanotechnology related advancements.

Also encouraging is the finding that across all levels of education and intended participation, the largest percentages of learners were interested in using course materials for application, above simply obtaining a superficial or even deep understanding of the course topics. Again, this supports the assertion that nanoHUB-U is meeting their main objective in providing MOOCs: supporting the transfer of research findings into actual use by others.

Interestingly, a large percentage of learners indicated they desired a high grade in the course, despite no formalized recognition of the value of "successfully completing" a MOOC. The percentage that reported not caring about grades was roughly equal to those that desired a high passing grade. This finding further highlights the diversity of learner needs and intentions when enrolling in a MOOC. It is not possible for one course to meet the learning needs so diverse as some learners not caring at all about grades and another group desiring a high final grade outcome. It may be time to consider innovating the MOOC so that learners can have a more personalized learning experience.

Recognizing the intention of these learners at the time of enrollment was to apply information from the MOOC, there are implications for instructional design of advanced engineering MOOCs. For example, instructors may want to consider how well they fully bridge the gap from conceptual understanding to practical use of information. This may include using real-world contexts in teaching materials and providing resources for later application of course concepts. Also considering a large group of learners indicated a desire to achieve a high grade, together, these findings suggest that there may be an opportunity to work with industrial organizations to offer professional development through MOOCs.

With regard to motivation for learning, results from this survey suggest that learners enrolled in highly technical nanotechnology-related MOOCs were largely intrinsically motivated. In other words, learners were motivated by internal desires to learn the content presented in the courses. Though extrinsic motivation was present, it appeared to have much less to do with learners' intentions for the course. This is consistent with previous discussion of these motivational orientations, as even decisions stemming mostly from inherent motivations are at least partially motivated by external factors. This is likely to be particularly true for learners who encounter educational or professional requirements for continued education. If only a single style of instruction can be used to pander to as many learners as possible, it seems safest to adopt a style that caters to learners who are largely motivated by intrinsic factors. This strategy likely lends itself well to the design of online courses, as online learners have less external accountability—something largely unneeded for intrinsically motivated individuals.

Limitations

As with any research, this study had some limitations. First, this study only yielded responses from a small portion of learners enrolled in the MOOCs to whom the survey was administered. So while our survey was able to capture some descriptive information about the diversity of learners enrolled, we are unsure of the backgrounds and motivations of other learners enrolled in these courses. Additionally, it is unknown how these results generalize to all who enrolled in the nanoHUB-U MOOCs. Furthermore, it should be noted that all of the results from this study may not be broadly applicable to MOOCs, but potentially limited to generalizations of learners in advanced nanotechnology-related MOOCs. Future research should focus on MOOCs for other highly technical content areas in order to tease apart trends for learners in various fields.

Implications and Future Research

Findings of this research provide important information for the instructional design of technical MOOCs. For instance, knowing that the majority of learners intend to use what they learn in highly technical courses for application suggests that instructors should design the courses with application in mind. Further, as more educated learners enrolled in highly technical MOOCs often have moderate incoming knowledge of the course content, perhaps instructors should consider providing abbreviated versions of the courses, versions that eliminate potentially unnecessary introductory or background materials and assignments and that provide more efficient resources for learning about advanced topics.

Research should also aim to combine self-report data from MOOC learners with clickstream data of their actual behaviors within the online course platforms. This combination of information could provide additional insight into who is enrolling in various MOOCs. Clickstream data on the behaviors of respondents in this survey were collected and are currently being analyzed in accordance with the findings presented here in hopes of further developing our understanding of these learners.

Acknowledgement

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Appendix: Survey

1. How did you first hear about the concept of [course topic]?
2. What about the topic is most interesting?
3. Which of the following best describes what you hope to gain from the course?
4. Which of the following best describes your learning goals for this course?
5. Have you had prior experience with courses on this topic?

6. (Extent agreement) In a class like this, I prefer course material that really challenges me so I can learn new things. (Intrinsic)
7. (Extent agreement) In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn. (Intrinsic)
8. (Extent agreement) The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible. (Intrinsic)
9. (Extent agreement) When I have the opportunity in classes like this, I choose course assignments that I can learn from, even if they don't guarantee a good grade. (Intrinsic)
10. (Extent agreement) Getting a good grade in this class is the most satisfying for me right now. (Extrinsic)
11. (Extent agreement) If I can, I want to get better grades in this course than other students. (Extrinsic)
12. (Extent agreement) I want to do well in this course because it is important to show my ability to family, friends, employer, or others. (Extrinsic)
13. What is your employment status?
14. What type of setting do you work?
15. What is your highest level of education?
16. What institution did you last attend? Or if still enrolled, / currently attend.
17. What is your primary field of study?
18. Is English your native language?
19. On a scale of 1 to 7, how would you rate your level of English/proficiency?