

ART HISTORY IN THE 21ST CENTURY: THE INTEGRATION OF MUSEUM COLLECTIONS AND SOCIAL NETWORKING GAMES

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Abstract

Museums are vast repositories of materials and objects vital to teaching history and visual cultural studies. Traditionally, museum collections have been available to high school and university classes through fieldtrips and, within the past ten years, online collections. On site (and online) exhibits have made great efforts to engage visitors through a number of different strategies but most of the learning experience is passive, requiring visitors to simply view objects and read accompanying text. In order to use museum resources to greatest effect, methods of incorporating active learning strategies to the study of the artefacts are currently being developed. In particular, this study focuses on the potential of social networks and games to teach history and visual culture concepts and terminology through the myMuseum project.

myMuseum is a resource management game that allows large numbers of players to experience and learn about museum objects by creating their own virtual gallery space with the social networking platform, Facebook. The myMuseum prototype is currently being developed at RIT, in conjunction with the Luce Foundation Center for American Art at the Smithsonian American Art Museum, by faculty and students representing a wide variety of majors and disciplines: Computing, Game Design and Development, New Media, Animation and Film, Illustration and Cultural Resource Studies. Tangible outcomes resulting from the interaction of students from multiple disciplines and year levels in which the prototype project reflects on their individual class work are reported. In addition, this paper describes the myMuseum approach of combining game experience and web site support to incorporate active learning within history and visual culture courses. We explore game and supporting web site development, organizational challenges and future initiatives.

Keywords: museum education, multidisciplinary teams, active learning, innovation, new media, social media, Facebook.

1 INTRODUCTION

The role of the museum professional has traditionally been grounded, almost exclusively, in the historical study of objects. However, there has been a growing awareness that museum professionals need a wider set of skills. The undergraduate museum studies program at the Rochester Institute of Technology was created to meet the new needs of the museum studies graduate programs. The new major, Cultural Resource Studies (CRS), was designed to incorporate collection management, material culture, computing and business courses to better prepare future museum professionals. A research initiative was created to support the new major and focuses on the use of technology and interactive media within museums. The main purpose of this initiative is to give CRS students an opportunity to work on original research with museum clients for the required senior research project and to help museums solve technological problems. The first project of the initiative is the development of a museum outreach and educational game, myMuseum.

One of the main challenges in designing web sites and other interactive media is that multidisciplinary teams need to work together to align project aspects into a single coherent design. It is commonly

understood that this requires a collaborative approach; however, many of these projects are not as successful as they could be.[1] In order to create successful web and interactive technologies, the design team needs to be able to integrate the technical and non-technical aspects into the experience and this requires some critical social skills. Specifically, the teams need to be able to build consensus, accommodation and tolerance of different viewpoints. Evers[1] reports a number of studies in which there is a fundamental breakdown within the multi-disciplinary team members' performance. Solutions from these teams tend not to reflect the opinions of the group as a whole but instead are dominated by technical solutions which limit the full potential of project outcomes. During production, there is a tendency for team members to claim a task or territory and then work in relative isolation with minimal communication with different group members. The skills that these individuals lack are not technical or content related expertise but are collective, management and social skills that develop through group interactions and experience on the job.

New media projects at RIT are designed to bring together interdisciplinary groups to help them build these social skill sets. The myMuseum project was a chance to bring in additional viewpoints to the project: Cultural Resource Studies students and a museum client. The project stems from faculty driven research in the area of educational games and museums and serves two distinct purposes: first it furthers the research goals of faculty and second it gives undergraduate students a chance to learn collaborative skills.

2 BACKGROUND

Museums, since their conception, have been seen as existing for the betterment and education of the communities to which they belong[2]. Objects are collected, studied and displayed with the underlying assumption that these objects are important to the process of learning about art, science, other cultures and the world around us. The act of collecting has since become understood as being driven by the socio-historical culture of those who do the collecting, typically, the dominant culture. In short, museums have long represented the establishment with the result that youth and other parts of the population do not see museums and their collections as being relevant. Cultural institutions have been attempting to overcome this disconnect by helping to make the heritage they preserve relevant to educators, primarily at the K-12 (primary and secondary) levels in the United States by developing teacher resources and exhibitions that support mandated curriculum [3][4][5].

Current efforts of cultural institutions focus on creating active learning experiences through discussions, guided and audio tours and interactive displays. The latest efforts have begun incorporating off site technologies including games, on line collection archives and interactive web exhibits. Museum focused learning, whether formal or informal, has the potential to create new, hybrid spaces between the everyday lives of the learners and the formal structures of the museum and educational institutions.

2.1 The Role of Social Media

Social media sites have been regarded as having the potential for both outreach and as educational tools. Much of the literature regarding social networking sites such as Facebook have focused on the virtual social space of the network. There are a number of informal documents that speak to concerns as to boundary establishment between teachers and students [6][7]. Some studies at the college level have focused on Facebook to improve communication between members of a project team[8] or as a third space in which students and teachers can explore constructions of identity and literacy education [9]. Museum specific literature generally considers the social networking media as a form of marketing and community building. Museums are beginning to become more sophisticated by using social media as a front end evaluation tool to help target content and themes for museum visitors[10]. However, museums tend to be more comfortable in using blogs to relay event, exhibit information, or behind the scenes development of these events. Museums also naturally gravitated to image sites such as Flickr which allow them to post, link and tag digital versions of their collection or events.

Museums have mainly entered the social networking world by creating museum pages that are updated with current events and images in an attempt to reach the vast Facebook –particularly teen and young adult - audiences. In addition to simply being a virtual hangout for teens and young adults, social media sites possesses powerful tools that can facilitate active learning. Kelly [10] draws a direct correlation between constructivist learning and social media within the museum environment.

Constructivism emphasizes the individual learner, choice, challenge and social learning and it is the model with which many museums use to describe museum learning and develop exhibitions. Social media can create informal learning environments through its flexible structure that allows the user to interact and draw their own conclusions from the content. The museum literature and research to date has focused, almost exclusively, on the use of social media as a place for uploading content (images, video, etc) and engaging with a network of friends or common interest groups. The use of applications written for a social networking site, such as Facebook, have not been explored. Educational and museum Facebook applications do exist and they are primarily study aids such as Flashcards[11], DoResearch4me[12], and Study Groups[13]. Artshare[14], developed by the Brooklyn Museum, allows a viewer to select works of art from a list of participating museums and to share them by sending them to friends or by posting on their Facebook wall.

2.2 Games

Games are powerful educational tools that have been used successfully by museums for children's web games, science-based games, environmental education (Quest Atlantis [15]) and zoos (Wolf Quest [16]). Games as well as social media sites also fit into the constructivist concept of Learning [17]. Unlike traditional forms of learning, the participants are actively engaged in the learning process, contextualizing knowledge from the perspective of their own experiences. However, games that focus on art, history or other museum types are lacking. Such experiences are virtually non-existent, especially for teens and older age groups. Teens and young adults are attracted to social, online environments and games. Socializing and playing games are fun activities and, as many educational games have shown, provide a learning opportunity at the same time [18].

One of the questions the myMuseum project explores is that of creating a powerful learning environment that can both educate and change attitudes by creating a new understanding of museums for nontraditional audiences. This environment can be understood from several levels. The first is learner-centric and focuses on the user experience of selecting artwork, avatars and décor items in order to create individual museums and to play the game of running a museum. The second important issue is that a social network game has the potential to create a third or hybrid space. Gutierrez[19] defined this third space as the intersection between student and teacher scripts, between the formal and informal, and the authentic discussion that would accompany the shift in the social structure and content of the learning experience. In this environment, the fundamental construct of museum could be transformed into something else as a result of the negotiation between the everyday understanding of the player and the formal museum centered knowledge. It is precisely this new relationship that we hope to achieve. That is, that there should be a two way communication between the player and the museum world. The player will incorporate museum objects into their own stories and lives, through their friend network and game play, and the museums will learn how the players relate to the museum objects.

3 DEVELOPING MYMUSEUM

The development of the myMuseum prototype began in the fall of 2009. Faculty from Cultural Resource Studies, New Media and Game Design and Development programs at the Rochester Institute of Technology (RIT) joined forces with the Interpretive Programs Manager of the Luce Foundation Center at the Smithsonian American Art Museum. In order to build the prototype, a team of faculty, students and museum staff work together as a collective unit. RIT faculty manage the project and provide expertise as to game and web site structure. The museum staff provide information regarding legal issues, and specific object information. The students develop the web site, game and game assets.

3.1 Creating an Overarching Pedagogical Structure

Before engaging students, an overarching idea of the pedagogical direction of the game had to be developed by the faculty. The game had to comply with museum mission statements of outreach, function as an informal learning experience and an educational tool suitable for high school and college students. In addition, the game would have to be flexible enough so that it could eventually incorporate every type of museum collection from natural history to contemporary art.

Initial meetings and faculty brainstorming sessions resulted in a “hands off” approach. The target demographic for which myMuseum was aiming was that of the students and it was felt that much of the project direction should come from them. Faculty also felt that to have real buy in from all the students, they needed to be involved in as much of the project design as possible. Due to the short amount of time in which to develop the prototype, the faculty did make a decision to create a Facebook game. However, the decision was run by the students first to make sure it had their approval. All other decisions, from game and avatar concept to advertising for a spring innovation festival, were worked out in conjunction with the student team members.

3.2 Project Organization

This project was essentially that of taking a selected group of RIT students and training them in the development of a large educational game project and there were a number of obstacles to overcome in order to assemble the team. One of the first issues was that no course existed that could bring students together from the different RIT colleges. Faculty relied on existing personal relationships with students from other classes to identify student project members. This meant that the students were participating under a variety of conditions (as shown in Table 1) and that there was no designated class room space. The main goal for the students was to complete a game prototype for Imagine RIT, a university sponsored innovation festival held every spring. This effectively meant that the team would have two quarters (20 weeks) to complete a functioning prototype. Additionally, some students could not participate for both quarters so there was a change of the project team between the winter and spring terms.

Table 1: myMuseum students and course type.

<i>Class type</i>	<i>Number of students</i>
<i>Independent study</i>	6
<i>Senior capstone project</i>	1
<i>Graduate TA</i>	1
<i>Volunteer</i>	3

The entire team of faculty and students met once a week in a collaborative space at RIT called the Idea Factory used mainly by students for studying, meetings or team projects. In addition, the students were broken into three teams that met with a specific faculty member on another day of the week: development, art and web site.

3.3 Communication

Due to the length of the project, with members coming and going, and the great distance from our partnering organization (Smithsonian Museum of Art in Washington, D.C.) it was decided to use Google Wave, in addition to face to face meetings, to brainstorm and communicate.

Google Wave is a real-time communication platform that combines the best aspects of social networking and other Web 2.0 technologies. It was, and still is, available only in beta format and invitation. However, due to the variety of conditions with which members had to work, this was decided as a better course of action than using email, chat, Skype, or Facebook and was used in parallel with myCourses, the online information platform used by RIT for class materials. Google Wave allows user to create a conversation by inviting friends into the group. The conversation is called a Wave. Additional topics, or conversations, can be added to help organize the discussion but access is only available to those invited to participate into each wave. This structure allows several useful functions:

- Material can be posted whether synchronously or asynchronously
 - Allows for real time conversations
 - Keeps record of the conversation just like a typical online discussion
- Comments and replies can be inserted anywhere in the discussion as blips
- Allows linking and embedding of images, text, documents and video

- Private chats can occur outside the main discussion stream between small subgroups
 - Students could ask private questions of faculty during Wave discussions

From the faculty point of view the use of Google Wave was successful for the start-up portion of the project and was used for sharing ideas and brainstorming. Some student groups also held meetings via Google wave that were available later for faculty to comment on and answer questions asynchronously. In all, there were 19 waves created with a total of 305 individual posts by 15 users mainly during the first quarter. The record on Google Wave of the brainstorming sessions proved helpful in additional, unforeseen ways. First, the museums specialists in Washington were able to stay involved and follow the game development process. Second, students that joined in the second half of the project quickly came up to speed by reading through the archived discussion and could join the discussion by adding their own comment blips. Third, much of the brainstorming content was later used for blog content for the web site.

A survey of students taken after project completion showed that the students did not agree with the faculty in thinking that Google Wave helped with team communication (57% replied that it was not helpful, 14 % were neutral and 29% thought it was helpful). There may be several reasons for this, the first being that, as a beta form, there were a number of technical issues with viewing embedded and file attachments. Google Wave was designed to work with the Chrome browser and Mac users as well as Firefox browsers had some compatibility issues. Second, during the last phase of the project which consisted of actually developing the project rather than brainstorming, students preferred to meet face to face with small sections of the group. Personal meetings were then supplemented by text messages, email and content sharing via mycourses.

The overwhelming feedback from this project and other blended class activities, as assessed from low evaluation of online communication methods and the students 'actions, is that the students prefer face to face meetings and that online communication is a poor substitute that is used only when face to face meetings are impossible:

I think what was lacking in the group was communication. MyCourses is very disorganized, the wave was difficult to use and only a few people utilized emails. The project would have gotten farther in my opinion if there was more CLEAR communication between everyone. Also I think meeting more than once a week would have been helpful.----student comment

3.4 Game Development

Student – faculty brainstorming sessions were used to make most decisions such as the development of the gameplay, art styles, the game name and avatars. In order to make sure that students contributed to the design portion, the faculty made sure to act like coaches or facilitators and minimize their “professorial” role. The design portion of the project took considerable time. Almost eleven weeks of the 18 before Imagine RIT (and the prototype unveiling) were devoted to planning the game and brainstorming.

One of the first decisions that the team had to make was what type of game structure and play would be used. Faculty, in conjunction with the Smithsonian American Art Museum, defined some of the initial criteria: the game had to show off the art, had to teach players about museums and the objects, had to be fun to play and could not be educationally “obvious.” Students tended to take the lead depending on their area of interest with the rest pitching in as needed. One student was particularly interested in developing the game play and drew up a proposal which was posted on Google wave. The team engaged in a lively online discussion about the game play which was followed up at the team meeting. Basic elements were taken from the document, modified by discussion and the concept of creating a gallery which would be scored by how “attractive” or good the collections would be to “visitors.” This concept continued to be modified to accommodate new ideas of game play or from practical factors, such as the realities of finishing the prototype on time. The basic core game idea, which remained constant throughout the process, is that players begin with a single gallery room, a little money and their friends. The goal is for the player to grow the collection by buying museum objects and attracting as many visitors as possible through exhibitions. The number of visitors and their satisfaction is determined by the level of sophistication of the assembled images and rarity of the objects. Collections must be grouped in ways which will make sense to the visitors.

The web site that accompanies myMuseum is an extremely important element of the game play. In order to gain the highest scores, the player must learn all the different combinations of collection types. The lowest (beginner) level of object grouping is based on elements that are obvious by looking

at the object such as color and subject content. In order to make more sophisticated collections, the player must begin to learn more such as artist, style, history, and media. These are key words that are tagged to the objects. The web site teaches these concepts by linking images together under themes and through multimedia content. Players that are not familiar with the cultural information of the different objects will have to research them in order to build more high scoring collections.

Figure 1 shows the first step in learning about the museum objects from the website. A random selection of objects is generated when the page opens. The player must select an object by clicking on it, as depicted by the arrow in Figure 1.

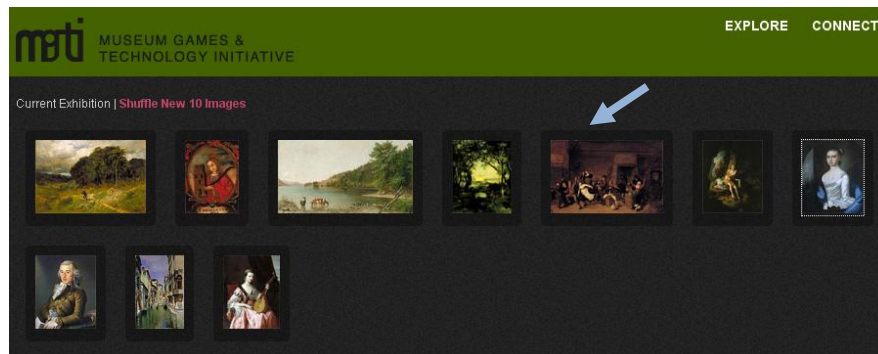


Figure 1: First page of the web site supporting myMuseum. The images are randomly generated and the player explores and learns by selecting an image. We will select the image under the arrow on the right.

The player is then taken to a screen, as shown in Figure 2, in which the selected image is moved to the left and its accompanying text is displayed. The other images are sorted and color coded by level match. The strongest matches are at the top, followed by lower level matches and then, finally, those that do not match at all. A dialogue box appears as the player moves over the image that tells the player the strength of the match and shows the tags associated with the image. The player is free to look the tags up on the internet or go to the web sites vocabulary page.

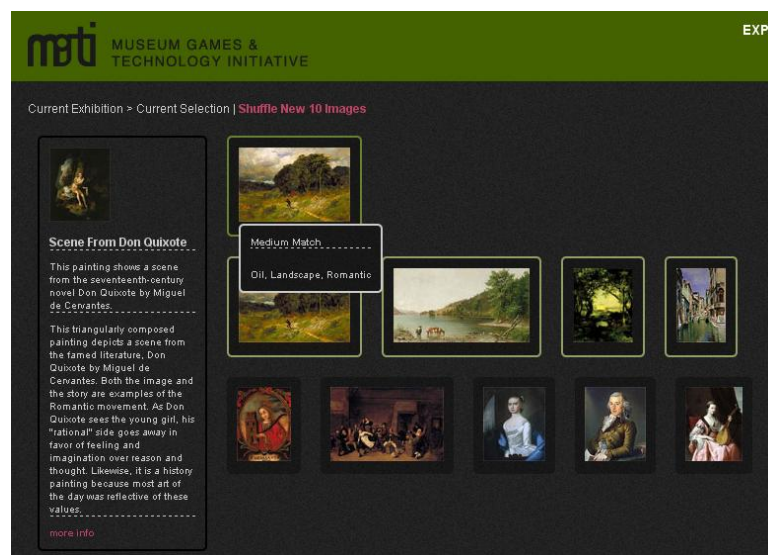


Figure 2: After the selection of an image (see Fig. 1), the images are re-ordered to display a hierarchy of level matches.

3.5 myMuseum Prototype Completion

The myMuseum prototype, see Figure 3, completed for Imagine RIT contained the main game features, Facebook interface and the first iteration of the web site. The prototype was running in the Facebook developer's mode and a number of dummy accounts were created so that festival visitors could test the application. Imagine RIT is a family centered festival and anecdotal feedback was overwhelmingly positive across all age groups, including parents.



Figure 3: Screen shot of the myMuseum prototype splash page.

Players were able to create their own gallery space by buying furniture and digitized objects from the Smithsonian Museum of American Art's collection. Although, there is no scoring and actual game play as yet, players enjoyed setting up the rooms to their own taste. Initial observations from Imagine RIT show that players across a broad range of demographics found the prototype engaging and wanted to be able to play it immediately.

The underlying structure behind myMuseum was modeled on an amalgamation of existing Facebook games such as Café World, Pet Society, etc. These games have been created by commercial entities and have a few basic formulas that make these games compelling such as tasks that must be completed on a daily basis, gifting and other activities that engage the player's network of friends and stand in, as Zynga [20] puts it, for real social interaction. myMuseum will also embrace many of these strategies as the game play is developed and implemented. Daily activities will involve real museum tasks like maintenance, exhibitions, preservation, gifting and group activities such as joint exhibitions.

4 ANALYSIS

The development of myMuseum was a faculty research project which incorporated students from the College of Liberal Arts, Imaging Arts and Science and Computing. While we were developing a game that would incorporate elements of constructivist learning and create a hybrid space from which faculty could later assess player interaction, it was also important to create a powerful learning experience for the students that developed the game. The faculty felt that being part of a project that was "real" and would be part of an ongoing research project would give the students a deeper understanding of their own field and of working with domain experts (faculty and museum staff). Additionally, as there was no formal class structure, the project had to improvise creating a hybrid experience that was not internship, work nor class. The idea of a hybrid, third space, has been applied to a number of different educational environments such as language, literacy, and human computer interaction [9] [19] [21] [22] [23]. Stemming from research in colonization [24] that sought to describe the creation of identity within native cultures that are overtaken by another, dominant culture, the third space refers to the formation of a new hybrid cultural identity. The third space focuses on collective renegotiation of cultural terms that result from boundary crossing. Defining the third space are terms relating to new and ambiguous relationships, identities and spaces: overlap between two or more fields or regions, questioning and challenging of assumptions, mutual learning, synthesis of new ideas, collective actions, relationships, reduced emphasis on authority and individualism [21]. By using an ambiguous project space with reduced faculty presence and authority, we hoped to maximize multidisciplinary input in the project and design by creating a hybrid space in which the traditional roles of the dominant RIT cultures (faculty and the technical students) could be renegotiated. Simply bringing together a multidisciplinary team doesn't necessarily imply that they will all contribute [1]. Individual member identities and roles have to be questioned and redefined to create a new, collective understanding of the importance and role of each team discipline.

Muller [21] states that one of the easiest methods to achieve hybridity is to change the site of the experience. By meeting in a lounge and online with no classroom activities, the space was not owned

by the faculty, the museum or the students. Discussion was fluid and based on a collective end goal of completing a prototype for the Imagine RIT festival. Working on interdisciplinary projects is not uncommon and is strongly encouraged by the university. However, developing a new project as collaborators with the faculty is not as common and students, anecdotally, reported the project as being more interesting than other projects. There are some areas of discomfort, however, for faculty. In order to change the power relationship within the team, the role of the authority figures (faculty) had to be renegotiated into something less powerful and more coach-like. This can be disconcerting to faculty members as there is a sense of loss of control.

The student participants completed an online survey after project completion (see Table 2) in an attempt to assess how much the students learned about the role and importance of other disciplines. That is, did they learn those critical social skills needed to work well on a multidisciplinary team?

Table 2: myMuseum student survey questions and responses.

question	Strongly agree	Agree	Neutral	Disagree
<i>How much did working directly with students from different disciplines affect your work on the project?</i>	28.57	71.43	0	0
<i>How much did working directly with faculty affect your work on the project?</i>	14.29	71.43	14.29	0
<i>Did you learn more about museums?</i>	0	57.14	28.57	14.29
<i>Would you say that working on this project increased your understanding of your own field?</i>	14.29	85.71	0	0
<i>How challenging was this project?</i>	14.29	57.14	14.29	14.29
<i>How important was it to you to finish the project?</i>	42.86	42.86	14.29	0
<i>Would you agree that you learned new skills while working on this project?</i>	57.14	28.57	14.29	0
<i>How important was it to be involved in a "real" project (as opposed to class exercises)?</i>	85.71	0	14.29	0
<i>Working for a client added challenges and difficulties that I would not have encountered otherwise.</i>	28.57	42.86	28.57	0
<i>Did participating on creating a facebook app add to your interest of this project?</i>	28.57	57.14	14.29	0

The students overwhelmingly responded that working with different disciplines was important. The survey results also clearly show that the students did not place greater importance on the presence of faculty than that of their peers. It was working with other peers, not different faculty types that gave them the greatest insight into other disciplines:

- *It expanded my knowledge of different fields and how students in other disciplines work. Doing this project expanded my knowledge of how other people have to work and what they have to do to create their part of the game. Their process directly affected how I worked on the project. I think this experience is incredibly beneficial. There should be more classes and projects that involve students from all different majors since that is what the real world is like.*
- *The juxtaposition of the different majors brought new perspectives, which I do not often encounter. Additionally, I learned a lot about the subjects in which the other students are majoring.*

- *I learned about what kind of work the different majors have to do at RIT in great detail.*
- *I think this kind of collaborative experience was helpful and should be a major part of any curriculum at school.*

Students felt that they increased their knowledge of their own field from this project and learned something about museums. This is an interesting result as there was no assigned reading or instruction of any kind. Discussion was focused towards issues of project design and completion. Overall, the students reported a very positive learning experience:

- *Working towards a goal (Imagine RIT) was also very good. It gave us a marker, something to work towards in the near future.*
- *Overall it was a great experience. I highly recommend trying to make more interdisciplinary projects with students.*
- *I hate facebook, especially the games, but I found that it was interesting to work on a game that was interesting and educational at the same time. Although I don't care for museums in general, I think that this will be a fun game.*

The completion of a game prototype was a tremendous success and students were justifiably proud of their work. There was, however, one area that was not successfully integrated. Although the web site is vital to the functioning of the game and the tagging system of the web site objects will form the backbone of the game play, there was a divide between the web and game teams. Although both teams were interdisciplinary and both worked well with their individual components, the web team never felt entirely integrated. The majority of discussion time was spent on game, rather than web site development, due to the overwhelming complexity of the game. As a result, the web team came to meetings and participated in game development discussion but game members had little input into the web site design. In future, faculty will need to make sure that there is a more equitable focus on different project components.

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