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Delivering Multiple-Intelligence driven Instruction: Facebook as Indicators of Multiple Intelligence

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Abstract

For centuries, teachers thought of intelligence as being limited to the literary and mathematical domains. Students whose talents were mainly in other domains such as the arts or sports were usually given less priority and thought to have less of an academic future. In 1983 Howard Gardner, a professor at Harvard University whose books have been published in 20 languages, challenged the traditional notion of intelligence. Gardner showed that students had a combination of varying levels of intelligence in seven domains. He proposed that instructional material, when delivered using the combination of intelligences which the learner possessed, would be much more effective. This would make the classroom more equitable since a wider variety of students would have an opportunity to learn and excel. In this paper, we explore the applicability of Gardner's theory of Multiple Intelligences to adaptive Instructional Technology. A framework is proposed for collecting student's multiple intelligence profile through their Facebook interaction. We categorize the Facebook posts of social hubs by the Multiple Intelligence that the posts represent. We also measure the level of engagement with, and learning from, these Facebook posts. This is used to calculate the relative level of intelligences possessed by responders. The data collected is used to fine-tune a responder's multiple intelligence profile. An advantage is that it can be collected day-by-day. Incorporation of this dynamic profile information in an instructional system—which delivers material fine-tuned to the student's combination of multiple intelligences—should increase efficiency of student learning.

Keywords: Multiple Intelligences, Howard Gardner, Facebook, Adaptive Instruction, Learning Styles

1. INTRODUCTION

Intelligence has always been a core concept within psychology (H. Gardner & Hatch, 1989). Francis Galton who was Darwin's cousin may have been the first psychologist to attempt the direct measurement of intelligence in the 19th century (H. Gardner & Hatch, 1989). However intelligence was traditionally thought of as being linguistic and Mathematical in nature, so that the linguistic and mathematical intelligences are the big two intelligences which teachers traditionally looked for and worked with in the classroom (Vincent & Ross, 2001). Howard Gardner, a Harvard university professor, was distressed that schools put an inordinate amount of emphasis on just two intelligences which include linguistic and logical/mathematical (H. Gardner & Hatch, 1989). Linguistic and logical/mathematical intelligences have traditionally been given the greatest focus and this has been shown in the types of intelligence tests which have dominated (McLellan, 1994). Tests such as the Stanford-Binet IQ tests only examine those two traditionally sought-after intelligences (Menkes, 2005; Sobieski, 2009). As a result, paper–based tests such as the SAT and GMAT typically measure Linguistic and Mathematical intelligence (Hedlund, Wilt, Nebel, Ashford, & Sternberg, 2006). In 1983, Howard Gardner corrected the misunderstanding

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surrounding intelligences by debunking the myth that there are only two intelligences (H Gardner, 1993). Gardner felt that if different measures were used, it is quite possible that we would hold an entirely different view of intelligence (H. Gardner & Hatch, 1989).

Every person has the potential to acquire information and express themselves in seven different ways which are known as intelligences (H. Gardner & Hatch, 1989). The intelligences are broad and include kinesthetic (physical), interpersonal (ability to relate to others), intrapersonal (ability to relate to self), visual-spatial (related to pictures, art and maps), auditory (musical) as well as the traditional two: logical (mathematical) and linguistic (verbal) (H. Gardner, 1999). Because of this, educators have been suggesting for the last 20 years that learning can be improved by using multiple representations of the same topic or concept (Kelly, 2008). Gardner explained that intelligence is human-potential which is based in the bio-psychological makeup of a student, enhanced by the culture within which the student grew up. Children as early as five years of age have shown that they have unique combinations of strengths and weaknesses among the seven intelligences (H. Gardner & Hatch, 1989). Multiple Intelligences are demonstrated in the abilities which enable people to solve problems, create products, achieve their goals in the physical world, and also build social capital within their social networks (Ellison, Steinfield, & Lampe, 2007; H Gardner, 1993; Kelly, 2008; Kelly & Tangney, 2004).

Multiple Intelligences in Learning

Since being put forward in 1983, Multiple Intelligence theory has been the basis for many education reform projects in schools—from preschool to high school (H. Gardner & Hatch, 1989). Visual-spatial intelligence is the ability to perceive concepts using pictures and images and also competence in transforming and regenerating images (McLellan, 1994). Students with visual-spatial intelligence are able to learn by using their mind's eye, visualizing and utilizing colors and pictures (Vincent & Ross, 2001). Logical-mathematical intelligence is the ability to deal effectively and efficiently with logic and numbers (McLellan, 1994). Students who possess logical-mathematical intelligence will be able to learn more effectively when they are given the task of working with patterns and relationships, categorizing and classifying (Vincent & Ross, 2001). Those with linguistic intelligence can use words with flair, usually in written or spoken form. They tend to be voracious readers and are able to understand and recall much of the things they read (McLellan, 1994). Students with linguistic intelligence learn by hearing, vocalizing as well as seeing words. If they are given the opportunity to debate topics, write for others or explain how things work then this will enhance their learning (Vincent & Ross, 2001). Musical intelligence is shown in the ability to detect, understand and generate patterns and rhythm. (McLellan, 1994). Students with musical intelligence learn quickly by making use of rhythm and melody. Music in the background may also stimulate their learning (Vincent & Ross, 2001). Bodily kinesthetic intelligence is talent in manipulating your own body in very skillful, creative ways and also being able to handle other objects (McLellan, 1994). Students possessed with bodily kinesthetic intelligence learn best when given the opportunity to move, coach, physically interact with objects and space as well as understand through bodily sensations. When they perform an activity or dramatize or demonstrate, this enhances their learning (Vincent & Ross, 2001). Intrapersonal intelligence empowers an individual to relate to the inner-self and its workings. It allows you to know yourself in a truly deep way (McLellan, 1994). Intrapersonal students learn best when operating by themselves, doing their own projects, working in their own space and at their own pace. Having them keep a journal where they keep track of their own learning and write what they have learned can also be useful (Vincent & Ross, 2001).

Targeting learning Styles - Adaptive Teaching Systems

Education started in the one room schoolhouse where one teacher taught several subjects in an interrelated way. But as happened in manufacturing; educators have tried to use the mass production approach to teaching and learning. During the industrial age, math, science, social studies, art, literary arts and physical education started being taught by different teachers, resulting in the loss of relatedness between them. In addition classes got bigger and less personal and so invariably the approach became very narrow and focused on the so-called 'average student' (Dennegrado, 2010). One result of the mass-production approach to education was that learning became heavily dependent on textbooks. One of the problems with using media such as textbooks is that content and the order in which it is

delivered and processed, is fixed (Lawless & Brown, 1997). Multimedia tutoring systems have mostly been patterned off textbooks, with the resulting limitation of "static" content being delivered in a "static" sequence throughout the learning experience. For example a static computerized Encyclopedia provides the same content and the same set of links to related material, regardless of the users learning style, multiple intelligence profile or level of knowledge (Brusilovsky, 2001). However, students demonstrate a variety of ways in which they process information—resulting in a variety of student learning-models and learning-styles (Kelly, 2008). Learning style theory is based in educational psychology and addresses differences in how students view topics, make decisions as well as how they ponder their interaction with educational content (Kelly, 2008). Informal interviews with teachers and students show that the way information is taught and the instructional approach taken, affects the quality of education, attitudes of students as well as the environment within which learning takes place (Haley, 2004). Educational content should be delivered based on an understanding of the multiple intelligences, learning-styles and learning-models which students possess, so that content is delivered in a manner which is effective for each student (Vincent & Ross, 2001).

Adaptive hypermedia is intended to address deficiencies in the one size fits all approach to multimedia systems. It creates a model of the aims, preferences as well as knowledge level for each student. It also constantly adapts itself to the needs and behavior of the student (Brusilovsky, 2001). If Students' individual multiple intelligences can be identified, then each individual can be accommodated more effectively in their process of learning (McKenzie & Consulting, 2004). Research into the area of adaptive hypermedia goes back to the 1990s. As one example, McClellan (1994) looks at usage of virtual reality in computer systems and how it can support students by allowing them to use all of their multiple intelligences. Adaptive educational systems are founded in the philosophy that systems are able to make quick decisions for the student, as to what materials she would best learn from, based on what her learning model suggests would be appropriate (Kelly, 2008). Virtual Reality comes out of user modeling and hypertext which have both matured enough to allow for cross Disciplinary research between them (Brusilovsky, 2001). Computerized multimedia environments allow for random retrieval of content, empowering the student to access information of the type required, in a desirable order (Lawless & Brown, 1997). Various studies have proved that when content is delivered based on the particular learning requirements of the student, learning is enhanced overall (Kelly & Tangney, 2004). Using Instructional technology that adapts to students, teachers can ensure that students are able to grasp particular concepts in the sequence which is required, before proceeding to related higher-level concepts. (Brusilovsky, Eklund, & Schwarz, 1998).

EDUCE is a tutoring system which adapts by using multiple intelligences to fine-tune the learning experiences of the student. It delivers learning resources based on the set of multiple intelligences determined to be possessed by the student (Kelly & Tangney, 2004). EDUCE focuses on four intelligences in delivering streams of content. They include verbal/linguistic, visual/spatial, logical/mathematical and musical/rhythmic intelligences (Kelly & Tangney, 2004). EDUCE attempts to come up with a way to dynamically adjust to each user's learning characteristics (Kelly, 2005; Kelly & Tangney, 2005). According to its authors, "All resources developed were validated and identified as compatible with the principles of MI theory by expert practitioners" (Kelly, 2008). Evidence from their study indicated that students learn even more in the adaptive case where the software adapts to the multiple intelligence student model, than when students are free to choose which material they want to use (Kelly & Tangney, 2004).

Facebook and Targeted Content Delivery

Web 2.0 in the form of Social Networking sites is used by more than 55% of teenagers to deepen and demonstrate their group "belonging" (Gangadharbatla, 2008). Facebook is chief among social networking sites, with more than 500 million active users, half of whom log in on any given day. Facebook users spend more than 700 billion minutes per month on Facebook (Facebook.com). Users control their own browsing patterns and level of interaction on Facebook. They are able to choose how and the frequency with which to visit web pages of friends whom they respect, desire the approval of and ultimately desire to bond with (Thackeray, Neiger, Hanson, & McKenzie, 2008). They carry out this social networking process by posting responses to topics which are of mutual interest to themselves and their friends. The demonstration of support for—and interest in—

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mutual issues, helps them build social capital with their friends (Ellison et al., 2007).

One aspect of Facebook's success has been its ability to provide targeted content to users (Guha, Tang, & Francis, 2008). This content delivery is based on the user's stated demographic (such as age, location and gender) and can be fine-tuned using their interests such as music and hobbies (Vara & Delaney, 2007). It even has a behavioral component which is based on demonstrated interests; not just what the users say their interests are, but also based on the navigational history of the pages that they visit often (Croft, 2007). Social networking websites like Facebook are becoming more and more popular among students as a mode of communication. As such, there may be great opportunities to use it to support educational communication and as a medium for collaboration with teachers (Roblyer, McDaniel, Webb, Herman, & Witty, 2010).

Demonstration of Multiple Intelligences - Facebook and other technologies

Several major approaches are being explored in the quest to achieve adaptive student learning. One approach is to allow the student to have direct input in describing their own learning style. This can be implemented by developing a student's learning model through questionnaires such as those found in psychometric tests. But despite the fact that large amounts of resources have been pumped into standard psychometric tests, big limitations are being discovered in them (H. Gardner & Hatch, 1989). Another approach is to determine students' multiple intelligences by detecting patterns in their navigational history as they browse educational content, especially the ones which lead to increased effectiveness in their learning (Kelly, 2008; Kelly & Tangney, 2005). Kelly and Tangney (2004) introduced a system (EDUCE) which uses machine learning to dynamically adapt to a learner's psychological characteristics—based on the multiple intelligences the student possess. It combines a pedagogical model which is driven by a domain model through a student model which feeds the presentation model. This setup allows the presentation model to deliver the educational material adaptively. They build a model of the student's multiple intelligences by examining the choice of MI material, navigation history, time spent on the various learning units and feedback given on the navigational choices. In a similar manner, this paper argues that a user's Facebook navigational history: the posts they react to, discussions in which they engage and the way in which their thinking is shaped, can give clues to the mix of multiple intelligences which they possess. We argue that interaction with their social network demonstrates a basic combination of multiple intelligences which is mediated by their dynamic self—their moods and feeling (H. Gardner, 1999; Markus & Wurf, 1987). Therefore, a student's use of Facebook should be valuable in fine-tuning their Multiple-Intelligence learning-model. This refined learning model can be used in instructional systems which deliver content tuned to the individual student's combination of multiple intelligences, thereby delivering the most effective multiple-intelligence tuned—educational experience.

2. METHOD

People who are popular on Facebook form the "social-hubs" in a social-networking context. They usually post multiple times per day on several subjects. This may include what they are doing or feeling, what they may have accomplished over a period, comments on an interesting movie they watched, links to articles on political happenings or videos from sporting events. Other users demonstrate and create social alignment with these "social hubs" in several ways. They can simply "like" their post, post comments in response to the social-hub's posts or re-share the social-hub's posts on their own wall (Colborne, 2009). By collecting data on users' visits to the Facebook pages of "social hubs", we will get an indication of which multiple intelligence the responder is using and demonstrating at a point in time, as well as the extent to which they are using it.

Hypotheses

Machine learning techniques provide the opportunity to refine the learners experience based on individual learning models (Stern and Wolf, 2000). Machine learning is implemented in Adaptive-Hyperactive-Media systems by using content level (presentation) and link level (navigational) adaptation (Brusilovsky, 2001). In EDUCE, students are given choices of material which they can use to learn about a concept or topic, and each of these choices reflects one of the four major intelligences to which the system caters (Kelly & Tangney, 2004). In EDUCE the knowledge model which stores the knowledge, interfaces with an overlay model (knowledge possessed by the student). This overlay model is updated regularly and is affected by page visits and performance on quizzes which increase or decrease student knowledge levels on specific topics (Brusilovsky et al., 1998).

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As users peruse learning resources within the EDUCE system (Kelly & Tangney, 2004), some of the navigational analysis which are used to determine the user's Multiple Intelligences (MI) profile include: a) Did the student spend the minimum time on a MI resource or did he spend a long time? b) Did the student use several or just one MI resource? c) Which MI resource did the student use first? d) Did the student attempt the question after viewing a resource—or before? e) Did the user utilize a resource more than once? Each choice of instructional material reflects the combination of Multiple intelligences possessed by the student (Kelly & Tangney, 2004). In the same way that the choice of which Facebook posts they respond to and the way responses are made, should reflect the multiple intelligences at work.

Therefore, Facebook navigational histories can indicate the multiple intelligences possessed by a student based on the intelligences connected with the material he interacted with, how much time was spent on each material, the order in which the material was experienced, as well as the depth of understanding shown after processing the material.

Hypothesis 1: The combination of Multiple Intelligences demonstrated by a Facebook user's navigational history is related to the combination of Multiple Intelligences possessed by the user.

People exist and operate at several levels. Some of those levels are dynamic and may change more often than others. For example, an architectural student (who possesses visual-spatial intelligence) may like sports as a hobby (indicating elements of kinesthetic intelligence). At the start of basketball season, according to the demands of her dynamic-social self (Markus & Wurf, 1987), she may think it worthwhile to build social capital with her basketball loving class-mates (a team sport which shows elements of interpersonal intelligence) through a discussion of the way their favorite team has been working together by executing passes, assists and rebounds. To examine the dynamic multiple-intelligence layer, we measure the dynamic-social layer which comes to the surface when users attempt to build social capital on Facebook. This provides a richer and more dynamic progression of trends to analyze since we are looking at the inherent traits of the person (the behaviors they recognize within themselves) as well as the topics they show it with (a basketball game) along with the level and quality of exchange which occurs dynamically about the topic (liking, discussing and learning from).

When students interact on Facebook, their dynamic mix of multiple intelligences will be demonstrated by their dynamic social selves. Students will vary in the level of response which they make to posts connected with certain multiple intelligences, depending on their multiple intelligence mix which is active at the moment in time (Kelly & Tangney, 2005; Markus & Wurf, 1987). The topic they are discussing and the perspective they take in a discussion will demonstrate what mix of multiple intelligence is active. For example, discussions about basketball should reflect kinesthetic intelligences. If someone usually blames their favorite team for losing a basketball game because of poor team work, then they possess a component of interpersonal intelligence. If there are days when they blame the team's losses on poor strategy, then they are demonstrating dynamic components of visual-spatial intelligence (Markus & Wurf, 1987; McLellan, 1994; Vincent & Ross, 2001).

Hypothesis 2: The dynamic mix of Multiple Intelligences being exercised by a student on a given day will be reflected in the mix of Multiple Intelligences demonstrated in their Facebook interactions on that day.

Data Collection

50 popular undergraduate students (each having more than 500 Facebook friends) will be recruited and paid (based on level of contribution) to participate in the study. These will be students who are active on campus in several organizations and do not mind sharing details of their social lives. They should be interested in a variety of topics and actively post to their Facebook several times per day on a variety of subjects, using a combination of status-updates, links and wall-posts. They will be paid based on two activities:

They will be paid to make several posts to Facebook, each of which indicates one of five multiple intelligences. They will be asked to post a YouTube music-video (Musical Intelligence), a Time Magazine article (Literary Intelligence), Video Highlight from ESPN (Kinesthetic intelligence), Sports-Statistics of the week from a popular game (Mathematical Intelligence) as well as a comment on how they are feeling (Interpersonal Intelligence). It is expected that each day, their top followers should indicate likes, post many comments to the

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post/topic/link, educate themselves through lively discussions on the topic or re-share the posts on their own Facebook wall.

Additionally, they will be paid to solicit assistance from their top Facebook friends (based on metrics generated by the researchers) in filling out a questionnaire on their multiple intelligences (adapted from *NOLS.EDU*). The mix of intelligences coming from this questionnaire will serve as the independent variable in the study.

3. ANALYSIS

We will write a Facebook application (like the "Top-Follower's application) which gives the user an idea of their multiple-intelligence-mix. This will be promoted as a new type of personality test which will help Facebook users to figure out what type of careers they and their friends might consider (based on the multiple intelligence mix they demonstrate). The selected social-hubs will be asked to give this application access to their profile so that will be able to pull information from their profiles and be able to pull data on their friends' activity on their wall. This application will harvest the text within the responses made to the social-hub's posts and links. To preserve user privacy during the study, a non-reversible hash-code will be generated in place of the usernames in the Post/Usernames/Response data before the record is inserted in the database. The pattern of comments generated by each user can then be factor-analyzed to see which type of comments they usually respond to, the way they respond and how frequently they respond, as a proxy for the combination of multiple intelligences they display.

To operationalize the navigational history of the responder's posts—to determine their mix of multiple intelligences—each of the social-hub's posts will be categorized (by graduate students trained in intelligence-psychology) according to the multiple intelligence it demonstrates. Responses to the social-hub's posts will be scored depending on the type of response and the level of response. For example, Likes are quick and easy to do and do not require much thought. They will be scored as 1 point (toward the intelligence which the post represents). Comments can be coded as 2 points since it takes some thought to make a comment. A discussion will be coded as 4 points since it shows some level of interest, engagement and thought. If friends re-share the post, then it will be coded as 3 points, since that means they identify with the post in a deep and meaningful way. As in EDUCE (Kelly & Tangney, 2004) we can augment the scoring by determining the level of learning which occurs through measurement of the change of the responder's opinions, which occurs over the course of a thread. While we may code a discussion as 4 points, we can score extra points based on the level of learning which the responder demonstrates. For example, if the responder argues actively to the very end of the discussion but does not change their opinion, then that counts as 1 extra point (engagement without real learning). If followers argue actively and eventually change or soften their position on the topic, then that counts as 5 extra points (maximum learning takes place). There are also in-between states. For example, if they follower starts out with a neutral position and either shows understanding of what is being discussed or ends up sympathizing with the dominant view (the view of the social hub or the majority) then we can assign them 3 extra points.

SPSS will then be used to do a factor analysis to determine the dominant combinations of intelligences (For example, a group which is found to have 70% kinesthetic and 30% spatial intelligence could be labeled the "Athletic group"). Psychology majors will code these combinations of intelligences and determine appropriate names for them. Finally, hypotheses will be tested by determining the correlation between multiple-intelligences-mix (from questionnaires) and multiple-intelligences-mix (from Facebook responses). To ensure adequate sample sizes as well as efficiency in the coding-effort, only students who respond frequently will be asked to do the questionnaire and only their Facebook posts will be analyzed (top 200).

Validity and Reliability Checks

The posts which are used as representations of the various Multiple Intelligences will be assessed by three psychology graduate students who will act as MI-coders. The graduate students will be selected on the basis of having experience in the administration and analysis of Multiple Intelligence tests (based on (H Gardner, 1993)). They will categorize the Facebook posts of the social hubs into the multiple intelligence that they represent. They will also score the responses which the followers make to the posts of the social-hubs. An MI-code for the type of intelligence along with the Response-level-score will then be added to each "Post/User-hash-code/Response" record so that it becomes an "MI-code/Post/User-Hash-

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Code/Response/Response-level-score" record. Finally, a database is created and populated with this combination of codes, for factor analysis in SPSS. Inter-rater reliability of the coding will be measured to ensure consistency in the categorization of intelligences as well as the scoring of responses.

The data collection and analysis will be repeated with another twenty students (acting as social hubs). In this second phase, the program will collect data during holidays to determine whether patterns of Facebook posting are similar to the patterns recorded during the school months when academic pursuits are foremost in the students' minds.

Table-1 shows hypothetical MI-coding, with categorization of posts of Facebook-social-hubs.

Type of link/post/status-update	**Intelligence Represented**
Sports video	Kinesthetic
Time Magazine Article	Literary
YouTube Music-Video	Musical
Sports-Statistics	Mathematical
Status update (e.g. "I don't feel great today")	Interpersonal

Table-1: Example Results of Intelligence to content Mapping (hypothetical)

Appendix-B shows some hypothetical data collection and the possible interpretation of the data in terms of how people's Facebook posts can demonstrate the multiple intelligence mix which they possess.

Variables

Dependent Variables (H1/H2): Multiple-Intelligence-Mix demonstrated by Facebook user.

Independent Variable (H1): Static Multiple-Intelligence-Mix of student—based on response to the long MI questionnaire (Appendix-A) - determined at end of data collection.

Independent Variable (H2): Dynamic Multiple-Intelligence-Mix of student—based on response to the short MI questionnaire (Appendix-A) - determined at three points during the data collection).

Control variables: Gender, previous computer experience, level of ability in school (based on EDUCE (Kelly & Tangney, 2004)).

4. CONCLUSIONS

Adaptive tutoring systems are constantly increasing in popularity. They offer the possibility of delivering training to students which is fine-tuned based using the multiple intelligences possessed by the student. Additionally, it allows students to receive instruction which is more pleasurable since it is based on their individual learning style. Even though these systems require significant levels of investment, students are starting to depend on and take these systems for granted—thereby demonstrating their necessity—because they allow them to learn at the pace and style which is convenient to their learning styles and life styles. We argue that understanding student's on-line behavior as it applies to their receptivity to on-line tutoring systems can be deepened by an understanding of their Multiple Intelligences as demonstrated in these on-line interactions. Specifically, we contend that we can get valuable clues to a student's multiple intelligence mix (especially their on-line Multiple intelligence interactions) using Facebook. With individual student models driving the content delivered from on-line tutoring systems, these systems will be able to fine-tune instruction-delivery so that students are educated more efficiently.

In the real world, it would be too expensive for psychologists to code each person's Facebook responses to determine the dominant intelligences which they display. However, it should be possible to use text mining to do much of what the psychologists would do in terms of scoring each student's level of engagement with Facebook posts, to determine the extent to which they possess each intelligence. The Facebook platform could then make this information available (dynamically) to education-content delivery systems as well as (statically) to educators to make education more fun, easier and ultimately more effective. The advantage is that a person's day to day interaction with Facebook would be able to guide the tutoring system in its deliver of highly-tuned multiple intelligence content (see figure-3). (King, Delfabbro, Kaptsis, & Zwaans, 2014)

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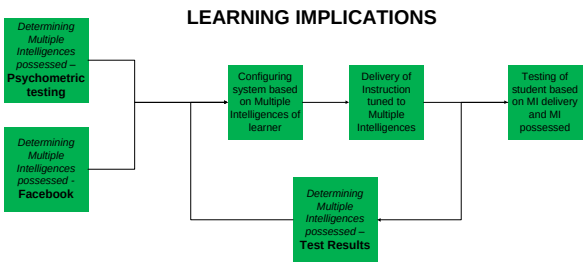

Figure - 3

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APPENDIX A: **MI Questionnaire (adapted from Nols.edu)**

Demographics

_____ Gender: Female □ Male □
_____ Number of hrs. on Facebook / week: <7□ 7-13□ 14–21□ 21-28□ >28□
_____ Level of Computer Expertise: Novice □ Intermediate □ Expert □
_____ I am enrolled in a Visual arts program
_____ I am enrolled in a Science or Engineering Program
_____ I am enrolled in a Literary Arts program
_____ I am enrolled in a political-science or humanities program,
_____ I am a student athlete or play for a sports team/club
_____ I am involved in the dramatic or theatre arts
_____ My GPA is: < 2.0 □ 2.0 - 2.5 □ 2.0 - 2.5 □ 3.0 - 3.5 □ 3.5 - 4.0 □

- Score one point for each question that you would answer "yes" to. Please just go with your first impulse: if you are thinking hard: you are probably thinking too hard.
- If you don't like how something is worded, feel free to fix it to your liking.
- You can use some half points if you like to do things like that.

Verbal/Linguistic Intelligence ____

___ I prefer written directions rather than a map.
___ I enjoy word games (e.g. Scrabble & riddles.)
___ I read books just for fun.
___ I like using field guides to see what things are.
___ I am a good speller (most of the time.)
___ I like talking and writing about my ideas.
___ If I must memorize something I create a rhyme or saying to help me remember.
___ If something breaks and won't work, I read the instruction book first.
___ For a class presentation, I prefer to do a lot of book research and writing.

Logical/Mathematical Intelligence ____

___ I find it easy to use the scales on maps.
___ I like logical puzzles and brain teasers.
___ I enjoy rope system challenges.
___ If I must memorize something I tend to place events in a logical order.
___ I like to find out how things work.
___ I enjoy computer and math games.
___ I love playing chess, checkers, Monopoly, cribbage, cards or other games.
___ In an argument, I try to find a fair and logical solution.
___ If something doesn't won't work, I look at the pieces and figure out how it works.
___ For a class presentation, I prefer to create logical systems & use charts and graphs.

Visual/Spatial Intelligence ____

___ I prefer a map to written directions.
___ I daydream a lot.
___ I enjoy hobbies such as photography.
___ I like to draw and create.
___ If I must memorize something I draw a diagram to help me remember.
___ I like to doodle on paper whenever I can.
___ In a magazine, I prefer looking at the pictures rather than reading the text.

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___ In an argument, I try to keep my distance, keep silent or visualize some solution.
___ If something breaks and won't work I tend to study the diagram of how it works.
___ For a class presentation, I prefer to draw pictures.

Bodily-Kinesthetic Intelligence ____

___ I like playing sports and other physical activities.
___ I enjoy activities such as woodworking, sewing and building models.
___ When looking at things, I like touching them.
___ I have trouble sitting still for any length of time.
___ I use a lot of body movements when talking.
___ If I must memorize something I write it out many times until I know it.
___ I tend to tap my fingers or play with my pencil while reading things like this form.
___ In a bad argument, I tend to strike out and hit things or run away.
___ If something breaks and won't work I play with the pieces to fit them together.
___ For a presentation, I prefer to move props around, hold things up, or build a model.

Interpersonal Intelligence ____

___ I get along well with others.
___ I like belonging to clubs and organizations.
___ I have several very close friends.
___ I like helping teach other students, and do it without it creating a power struggle.
___ I like working with others in groups.
___ Friends ask my advice because I seem to be a natural leader.
___ If I must memorize something I ask someone to quiz me to see if I know it.
___ I care about the physical and mental welfare of my fellow expedition members.
___ If something breaks and won't work I try to find someone who can help me.
___ For a class presentation, I like to team teach.

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APPENDIX B: Facebook Analysis of Multiple Intelligence

Multiple Intelligence		Score	Musical Intelligence	Score	Visual Spatial Intelligence	Score
POST (social Hub)	**STATUS-UPDATE:** How many of you regularly tell your siblings that you appreciate them?					
Response	**Like**	**1 point** (minimum support)	**Like**	**1 point** (minimum support)	**Like**	**1 point** (minimum support)
Response	My brother(s), and I do so almost all the time - even when we may disagree on an issue, or may not be entirely happy with one another	**2 points** (thought out response with some effort)	I like this track. It is lively and I love what Peter White does with the guitar in this one	**2 points** (thought out response with some effort)	This is a nice statue. I like the way it captures Roman architecture. The colors are great too!	**2 points** (thought out response with some effort)

Points Standings:

	Interpersonal Intelligence	Musical Intelligence	Visual Spatial Intelligence
Green Person	1 point	7 points	2 points
Blue Person	5 points	2 points	1 point
Yellow Person	2 points	1 point	9 points

Analysis:

Green Person:

Probably has a minimum of interpersonal intelligence (1 point), a little bit of visual-spatial intelligence (2 points) and a lot of musical intelligence (7 points). We could say this person has an Artistically-Musical personality. They may excel at directing music videos or creating CD-album covers.

Blue Person:

Probably has a minimum of Visual spatial intelligence (1 point), a bit of Musical Intelligence (2 points) and some Interpersonal Intelligence (5 points). We could say this person has a Musically-Emotional personality. They may excel at Counseling with use of Music or creating Motivational CDs which are set to music.

Yellow Person:

Probably has a minimum of Musical Intelligence (1 point), a little bit of Interpersonal Intelligence (2 points) and a lot of Visual Spatial Intelligence (9 points). We could say this person has an Emotionally- Artistic personality. They may excel at Interior decorating or Movie set designs.

** This simulation of data collection and analsysis is designed to give an idea of how we will create meaning from people's facebooks posts and responses. It is not meant as a demonstration of the statistical analysis.*