Utilizing the VARK Learning Modalities

to Include Learner Preferences in

the Open SUNY Course Quality Review Rubric

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ABSTRACT

This project is directed to the SUNY online learning (eLearning) courses which utilize OSCQR (Open SUNY Online Course Quality Review) rubric and process as course assistance for professors. The audience includes online learners at the graduate and undergraduate level. This project is designed to focus on the learner preferences of online graduate and undergraduate students. To assist instructors, this project offers a demonstration on how to offer learner preference modalities as well as learner preference assessment questionnaire via the VARK website (https://vark-learn.com/).

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I am grateful to all of those with whom I have had the pleasure to work with during this and other related projects. I appreciate the professors and leaders in the IDT department at SUNY Polytechnic Institute and all of their guidance along this journey.

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INTRODUCTION

Learning preference appears to have a positive impact on successful delivery and cognitive processing of information between instructor and learner in an online learning format. During the 2020 COVID-19 pandemic, scores of students, professionals, and instructors were quarantined to homes throughout the world leaving them with one primary means of instruction – online. While some instructors are familiar with the various learning styles and preferences that exist, many are not, and will rely on what comes most natural to them. Typically, without having been exposed to the various learning styles, an instructor will default to their own preferred learning style, thus potentially omitting the preferences of part or all of their audiences' preferences.

VARK is a popular learning style model that consists of four modalities of learning (preferences). VARK is an acronym that stands for visual, auditory, reading/writing, and kinesthetic. In 1992 Fleming and Mills explained the four modalities that students experience with teachers during the learning process. This project will focus on the VARK model for learning style.

The State University of New York has developed the Open SUNY Course Quality Review (OSCQR) rubric to ensure online courses are learner-centered and well designed. Currently, the OSCQR rubric (www.oscqr.suny.edu) is a non-evaluative guide which targets online course design and is not restricted to mature online courses. The rubric is broken down into 6 categories: Overview and Information, Technology and Tools, Design and Layout, Content and Activities, Interaction, and Assessment and Feedback. Each of the six categories has a full explanation of the

standard, a list of examples, ideas, and suggestions to improve, related research, effective practices, and the opportunity to submit examples, evidence, and best practices for consideration.

Within the OSCQR rubric the Interaction section contains guides regarding feedback timeline expectations, interaction expectations (etiquette, grade weighting, etc.), getting to know the instructor, tools to get to know the class and instructor, collaboration tools, and encouraging learners to share. What the Interaction section of OSCQR doesn't currently provide are definitions of modalities in which learners prefer to learn, tools or pathways to achieve instruction via the various VARK modalities, and tools to assist learners in comprehending their preference in learning modality.

This document proposes suggestions and examples through the use of a demonstration website on how to develop a section within OSCQR to integrate the use of learning preference modalities. The website demonstrates how a course could be enhanced to take different learner preferences into account. Faculty can utilize these modalities while designing e-courses, building on the OSCQR rubrics' current model, to better enhance the learner experience and cognitive processing.

LITERATURE REVIEW

Online Course Rubric

Research supports various online learning preferences of higher education learners along with a need for multi-modal pedagogy while developing online, also known as eLearning, courses. The Open SUNY online eLearning course rubric referred to as OSCQR (Open SUNY Course Quality Review) provides online content design, guidelines, and recommendations for their

instructors. The primary categories covered in OSCQR are: Overview and Information, Technology and Tools, Design and Layout, Content and Activities, Interaction, and Assessment and Feedback. Each section is broken down into multiple "standards" which break down what the eLearning course should contain and how to execute it. Although OSCQR does an exceptional job at providing information and tools to instructors for developing a robust online course, it omits learner preference which much literature suggests is necessary to optimize online course overall effectiveness to learner satisfaction, learner performance, and course attractiveness to students.

Literature Sources & Key Terms

The literature in this review was acquired mostly from the SUNY Polytechnic Institute online library database (ERIC and Computer Science) and is peer-reviewed material recently published except for information taken from the VARK website. Key terms and words such as eLearning, online learning, rubric, OSCQR, VARK, learning preference, learner, preference, higher education, and learning modalities were used to search the literature used for this project. Literature related to classroom learning was omitted from the search for literature with the exception of literature that includes eLearning in its results and could prove beneficial to future development of online courses that include learner preference.

Audience

The primary audience targeted is higher education online learning (eLearning) courses and the rubrics associated with course development. Online learning and eLearning are used interchangeably when referring to higher education pedagogy delivered online. The primary target audience for this review is higher education instructors and the staff associated with developing and implementing rubrics for their courses. Although there was evidence of literature supporting

courses and students on a global level, for the sake of this project, the focus will be on courses within the United States and is not specifically limited to any one particular course or subject matter as long as the course or subject matter can effectively be taught online in an eLearning format.

History of Learner Preference & VARK

Learner preference has been discussed as far back as Aristotle. More recently, learner preference has been studied with attempts to enhance the learning environment and increase the learners' ability to receive, process, and retain information. In 1992, Fleming and Mills wrote an article that "over the last four decades the literature from both psychology and education has supported the proposition that learners of all ages have different yet consistent ways of responding in learning situations." (Fleming, 1992, 137). It was from this article that the concept of the VARK preference mode questionnaire was developed to help learners and instructors gain an understanding of their preferred learning modality(s). VARK is an acronym for the four learning modes outlined by Fleming and Mills which represent visual (V), auditory (A), reading/writing (R), and kinesthetic (K). The authors go on to indicate that some learners are uni-modal (possess one of the four modalities as their primary learner preference) whereas others are bi or multi-modal (have a strong preference for 2 or more modalities).

Higher education online courses are a relatively new concept in the grand scheme of education history. The first recorded online courses with real-time instruction and interaction began to appear in the 1990's, making online learning a youthful mid-20's at the time of this project. During that time the topic of online learning effectiveness and the rubrics utilized to develop online courses has been, and continues to be researched. The literature reviewed in this

project supports the concept that online learning rubrics are critical to the success of online course development, as well as learner preference. The use of VARK to help decipher learner preference is essential to those rubrics. "While online learning continues to proliferate, assuring quality of learning in e-environments becomes an interesting challenge. The present study clearly shows that maintaining quality in an online course requires meticulousness in developing each and every aspect of a course." (Sanga, M. W. 2017, 21). Sanga refers to the development of an eLearning course through the use of a rubric comprehensive in nature. As seen from this research, online learning technology continues to evolve and suggests that its development evolves with it. In another research paper, the author states that "students possess a wide diversity in learning preferences. This necessitates teachers to effectively deliver according to the needs of the student. Multiple modalities of information presentation are necessary to keep the attention and motivation of our students requiring a shift from the traditional large-group teacher-centric lecture method to an interactive, student-centric multimodal approach. (Prithishkumar, I., & Michael, S. 2014, 183). It can be deduced that learner preference is a critical part of creating effective content as we shift to the aforementioned new paradigm of online learning.

Uni-modal, Bi-modal, and Multi-Modal

Further literature supports the idea that online learning is still in its developmental stage and there's room for improvement. Another author expands on its development from the societal perspective including various modes of learning preference and states, "The recognition of practice in online instruction is still subject to interpretation and different approaches as a result of the rapid changes in technology and its effect on society. The purpose of this paper is to address these differences

through a synthesis that can be easily accessed and consulted by educators in the field of e-learning. Learning resources are varied in terms of the multimedia content and multi-modal delivery channels to cater for the different learning preferences of learners." (Debattista, M. 2018, 93). This begins to expand on the concept Fleming touches on while describing VARK when he says learners and instructors can possess multi-modal preferences allowing for flexibility in learning, however, some individuals have been found to be uni-modal making it challenging to learn if their preference doesn't align with the mode used to instruct a course. One author states, "Multimodal learners can be more flexible about how they exchange information than those with a single preference. However, multimodal learners need to have at least two, three or four modes involved in learning before they are satisfied. Teachers at [sic] nursing program should use more than one teaching modality to be able to make their students satisfied with their learning experience." (Alkhasawneh, E. 2013, 1546). Additional literature research stated, "Many students have an improved ability to learn and remember when offered multi-modal content that includes text and visuals. Can infographics, illustrations that use graphic elements and text to present information, be incorporated into online classrooms to enhance student learning?" (Yarbrough, J. 2019, 1). This literature went on to prove that illustrations and infographics did in fact enhance student learning.

Although many learners are found to be multi-modal, there was a commonality among literatures regarding kinesthetic (K) learning found to be most prevalent. One author states, "The findings of this study should be of interest to accounting instructors using online learning tools or contemplating integration of online learning tools in the classroom. Findings indicate that the kinesthetic learning style is the most prevalent which might encourage textbook publishers to

create more interactive online learning tools." (Leach-López, Maria & Lee, Eunsuh & Leach, Megan. 2019, 133). In this case, the author suggests supplementing a text-based learning modality (read/write) with an online tool which matches the majority of learners' preference (kinesthetic). An example of kinesthetic learning tools would be demonstrations, simulations, videos, and movies of "real" things according to the www.VARK-learn.com website. If an online instructor is only posting text learning materials and assignments are coming from textbooks, then they would likely omit the kinesthetic learner preference even though the modality is delivered via a technology such as a learning management system known for its ability to manage kinesthetic material (such as video).

"The ability to match a student's unique learning style with the preferred type of instructional environment is crucial. Some of the students interviewed suggested having some type of minimum requirements for coursework to ensure continuity between courses offered online versus in a traditional classroom. The findings were supported by literature suggesting that to improve course effectiveness, multiple instructional practices must be implemented into the course design in order to reflect the diversity of learning styles that are represented online environments." (Tonsing-Meyer, J. 2013, 143). Here, the author ties together two thoughts regarding learner preference. First, it's identified that learner preference will improve course effectiveness. By implementing multiple instructional practices (aka, multi-modal), the course is not only improved, but students also become aware of the potential loss in modalities when transitioning from traditional classroom to online and their desire to maintain a multi-modal environment.

Performance

Performance of online students can also be impacted by inadvertently omitting learner preference during the development of an online course via a rubric without learner preference. One author states, "The paper concludes that the achievement of online learning can be improved by providing instruction in a manner consistent with each student's learning style. However, it is important to keep in mind that, even if a specific student learns best in a certain way, he or she should be exposed to a variety of learning experiences to become a more versatile online learner. The new result indicates that students with the auditory learning preference do not select online education as their first choice for learning. The combination of different techniques can make it possible for students with all types of learning styles to be successful in an online course." (Zapalska, A., & Brozik, D. 2007, 325). As we can see from this literature, the author makes it a point to include learning modalities not consistent with each students' preferred learner mode in order to create versatility in that learner while maintaining a multi-modal approach to ensure they meet the needs of every learner type.

Rubric Development

Research on how to construct a learner preferred online rubric has been conducted and researchers propose tools to accommodate instructors. One author created a system to accommodate the learner preference needs and states, "The findings describe how the final implemented iLearn platform intends to address the issues found with the limited personalisation within common learning management systems and intends to provide the learner with a personalised learning experience." (Peter, S. E., Bacon, E., & Dastbaz, M. 2010, 91).

Conclusions

Based on the literature reviewed as well as the additional literature available on similar and related topics, there appears to be enough content to justify further investigation into the question as to whether or not learner preference should be added to the Open SUNY OSCQR rubric, what content to include, and how learner preference information would benefit instructors and learners during the development of online courses. As stated by Jegatha, et al, "The performance of the learners in E-learning environments is greatly influenced by the nature of the posted E-learning contents. In such a scenario, the performance of the learners can be enhanced by posting the suitable E-learning contents to the learners based on their learning styles." (Jegatha Deborah, L., Baskaran, R., & Kannan, A. 2014, 801).

Through the use of a web-based prototype at www.AccountabilityBud.com, learner preference using the VARK model in online learning can be visualized. The various modalities are listed and described to offer a template by which

Although the OSCQR rubric does an exceptional job at providing information and tools to instructors for developing a robust online course, it omits learner preference which much literature suggests is necessary to optimize online course overall effectiveness to learner satisfaction, learner performance, and course attractiveness to students. Online learning technology continues to evolve and its information and instructional development should evolve with it. Learner preference is shown to play a critical part of creating effective content as we shift to a more prevalent online learning environment locally, nationally, and globally. Learners and instructors can possess multi-modal preferences allowing for flexibility in learning, however, some individuals have been found to be uni-modal making it challenging to learn if their preference

doesn't align with the mode used to instruct a course. By implementing multiple instructional practices (aka, multi-modal), the course is not only improved, but it also aids students in transitioning from traditional classroom to online and their desire to maintain a multi-modal environment. Performance of online students can also be negatively impacted by inadvertently omitting learner preference during the development of an online course via a rubric without learner preference. There's enough outcome in literature and research about the topic of learner preference to justify its inclusion in an online learning rubric. This would impact the outcome of learner satisfaction, comprehension, and processing of information.

METHODS

Prototype Development

Utilizing the research from literature reviews, a prototype will be developed to demonstrate answers to the following questions: How should learner preference be added to the OSCQR online rubric and what content should be included? Using the OSCQR website as a starting point for content, a prototype website will be developed at https://accountabilitybud.com/. The prototype will demonstrate the look and feel of a "Learner Preference" section of the rubric. A web design tool provided by GoDaddy will be used for this project.

The prototype development utilizes the GoDaddy Website Builder tool and began with a theme labeled "Modern". The template allowed for some customization within the prefabricated background and layouts. Much of the design used to convey the "Learner Preference" section of the OSCQR rubric consisted of wire framing the content, inserting text, adding relevant imagery, and providing a demonstration of VARK instruction throughout the design. Each of the learner modalities were demonstrated throughout the design by including visual imagery (V), auditory

description of VARK with an embedded YouTube video on the home page (A), textual descriptions of each modality (R), and the VARK questionnaire using iframe, complete with instant results (K). See Appendix A.

The VARK modality platform seems to be the most researched and published learner preference model. For this reason, VARK is the model utilized to demonstrate learner preference throughout this project. The VARK website, https://vark-learn.com/ is used as a reference as it is the website developed and maintained by the originators of the VARK model. A tool this project will utilize from the VARK website is the VARK questionnaire. The questionnaire has been developed to assist in the determination of learner preferences, whether they are uni-modal or multi-modal.

DISCUSSION

Initial Objectives

This project was initially developed to bring attention to an experience that took place while training adult learners. During the training sessions, it became evident that certain types of questions related to consuming information were recurring. After some post-training investigation the term "learner preference" seemed to produce alternative methods to teaching the content which catered to the preferred style or "modality" of the audience. The curriculum was altered and as the course was presented less and less questions about the delivery of the content appeared. Instead, the questions were primarily targeted at processing information versus a struggle to consume information. That's when it was realized that it was more effective to include learner preference during instructional and information design.

At the onset of the project, the thesis concept was too large. The topic needed to be narrowed down so it could easily demonstrate the impact of learner preference. The Open SUNY Course Quality Review Rubric was an ideal candidate for this project based on its current purpose and design. The rubric assists instructors in developing online courses and is designed to be learner centered. The rubric has been in production and has achieved award-winning status. Since the rubric is established, tested, and performing well, it would be an ideal testing ground to insert a learner preference component. Instructors would not have to take on a new system, they would only need to implement one additional component that is built to assist them in making the courses truly learner centered based on the learners' preference.

Takeaways

COVID-19 occurred midway through this project and the importance of conversion from traditional classroom learning to online learning become evident throughout the world. People from all walks of life and all ages were required to convert from traditional classrooms (and offices) to virtual, each with their own unique learner preferences. In some cases, learning management systems were utilized to replace the live classroom environment. The virtual classroom transition was being observed by the learners in anticipation as to how well the instruction and the comprehension would model their live classroom environment. Companies such as Zoom offered free video conferencing tools to enhance the learning experience during the pandemic. In some instances, such as the class of my oldest son, the instructor was astute enough to employ instruction utilizing the various learner preferences described in VARK. Whether or not she was aware of the VARK learning model is unclear, however; she was able to include online instruction using multiple tools such as email, YouTube, Vimeo, worksheets mailed to the

students, and pre-recorded lessons using her smartphone to achieve a well-rounded daily rubric which included visual, auditory, reading/writing, and kinesthetic learning.

As much as my son's teacher successfully met the needs of the multiple learner modalities, I am certain there was the opposite experience during the COVID-19 lockdown, not to mention the days and years prior to the pandemic. If there's one silver lining to the pandemic that we can take away, it's that we, as a world, were able to expedite the use of online learning tools that may have been stalled previously by the comforts of our already-established systems used for instruction. By having the face-to-face experience removed from our societies we were forced to leverage online learning immediately. By having a rubric for online learning that includes all attributes of a successfully executed learner-centric course, including learner preference assessment and employment, we can walk away from COVID-19 with a far better online learning experience, consumption, and processing of information. There is currently a gap between online learning methods, online instructional rubrics, and learner modalities. This project bridges that gap.

Future Action and Relationship to Literature

The sum of the parts, as seen in the literature, creates the whole picture. SUNY created an amazing rubric to assist in the development and delivery of online learning through OSCQR. As with any innovative creation, further enhancement is to be expected. Every year new technology drives the development of new devices that improve our experience. In the same way, how we create online learning experiences must also be enhanced with goals of increasing user experience, improving delivery and consumption of information, and ultimately boost the learners' ability to process that information into something tangible.

The most common learner preference was found to be kinesthetic. Kinesthetic learning includes instructional techniques such as videos of "real things", simulations, demonstrations, and hands-on work. Large learning management systems (LMS) such as the one utilized by SUNY Polytechnic Institute, Blackboard, possesses the capability of such methods. For organizations that do not have such a robust, flexible LMS, other resources have been made available at little-to-no cost such as YouTube, Gmail, and Zoom. Some learning curve would be expected for instructors to gain a proficiency in these applications. However, with the proper instructional design and development for the instructors, the improved outcome of consumption and processing of information would be expected. Tutorials and training in written, video, and simulation (possibly even gamification) has been, and could continue to be, developed to gain a proficient knowledge in the operation of such tools by instructors by companies such as www.Lynda.com.

Emphasis within the literature was placed on the importance of including learner preference in online learning as well as the importance of a rubric and structure of a course. As online learning moves to the forefront of global education during the COVID-19 pandemic we have the opportunity to explore ways to produce improved academic outcomes using techniques that are studied and analyzed to show a positive impact on online learning. VARK learning modalities have enough of a history within the online learning research community to warrant consideration of implementation in online rubrics such as OSCQR.

CONCLUSION

After extensive review of literature on the subjects of online learning, learner preference, and rubric development it is evident that there's a link between the successful transmission and processing of information in online education when learner preference is included in an online

learner rubric. The OSCQR online rubric utilized by SUNY was assessed for learner preference and it was determined that there's currently no guidance to aid instructors in various learning modalities. Modalities such as video, simulation, games, project development, and audio recordings would address learner preference by appealing to each of the four major learning modalities in the VARK learner preference model.

In order to demonstrate how the VARK learner preference model could be implemented, a prototype website with VARK content as a reference for building learner preference into an online rubric such as OSCQR was created. Within the prototype are descriptions of the VARK learning modalities as well as examples of tools capable of delivering the various modalities. Implementation of learner preference using the VARK model could be done with very little effort. Quality training to ramp up instructors on the various tools needed to deliver content utilizing the VARK model would result in an improved learner experience and performance. There's ample research on the topics of online learning, rubric development, and learner preference to offer justification of its use in online course development

Through research and observation it became clear that we are on the verge of using online learning more than ever before in history. The COVID-19 pandemic of 2020 shifted the education world to online learning like never seen before in our universities, our country, and the world. New methods of online education are evolving as the technology evolves with the online learning experience. Gamification, the use of games and gaming to teach, is quickly become more widely utilized to deliver information to learners and is an example of kinesthetic learning Kinesthetic learning has been identified in research as the most popular form of learner preference of the four VARK modalities. The use of text, whether in the form of web page text, text documents attached

to assignments, slide deck presentations that consist of mostly text, and text books should not be considered the only means to transfer information and knowledge. When developing online education, additional modalities should be used to accompany text to enhance the experience and successful transmission of information to learners, many of whom, whether through nature or nurture, prefer alternative learning modalities to reading and writing.

APPENDIX A

Figure 1: Home Page of Learner Preference

Figure 2: Navigation Menu

Figure 3: Purpose and Description of Learner Preferences

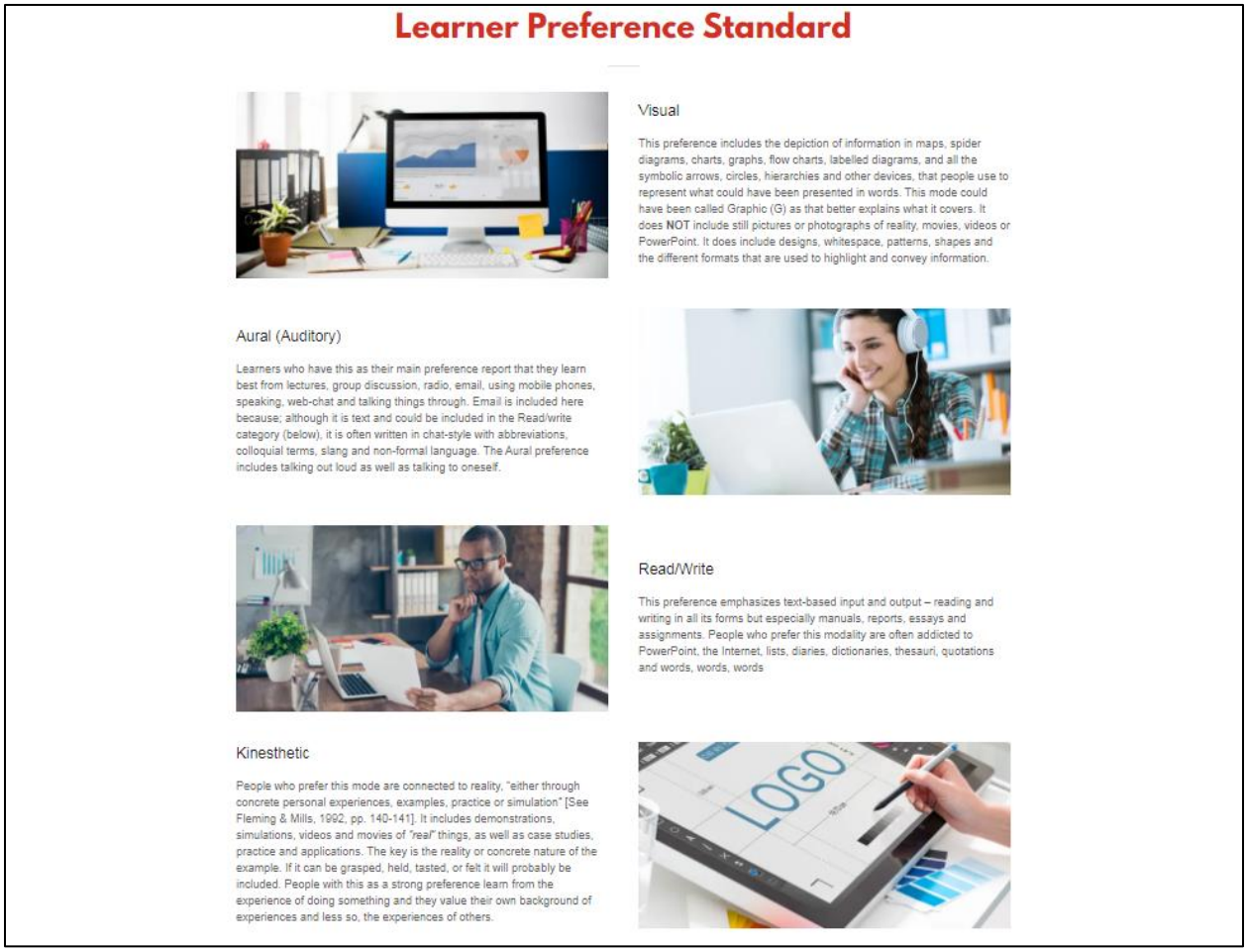

Figure 4: Standards that Define the Learner Preferences

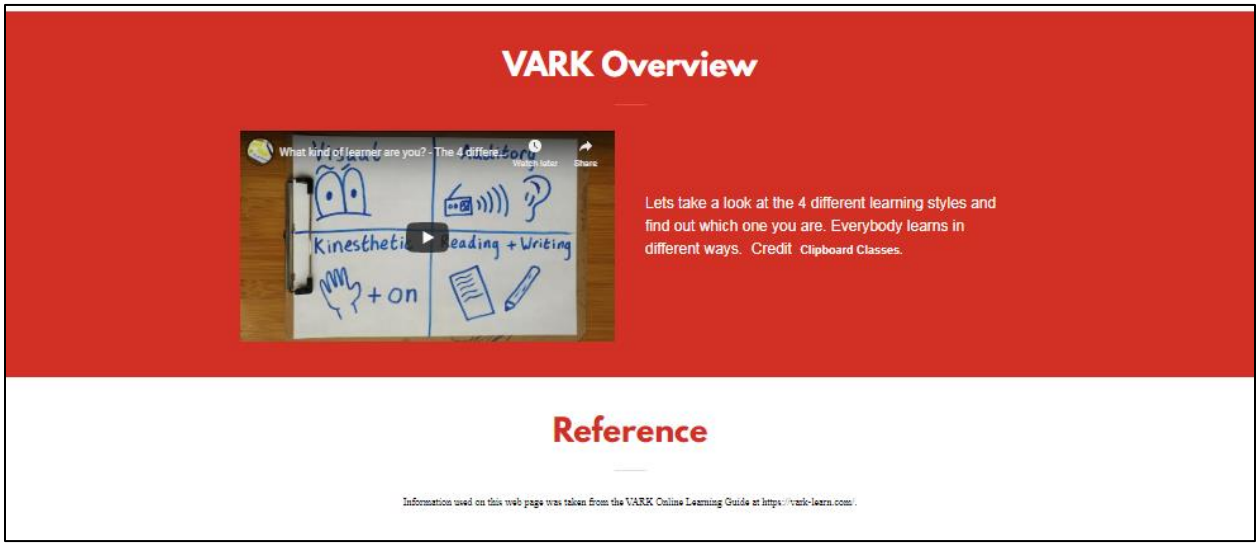

Figure 5: Video Tutorial and Reference of VARK Overview

Figure 6: Examples Page (each modality) Provides Examples of How to Teach

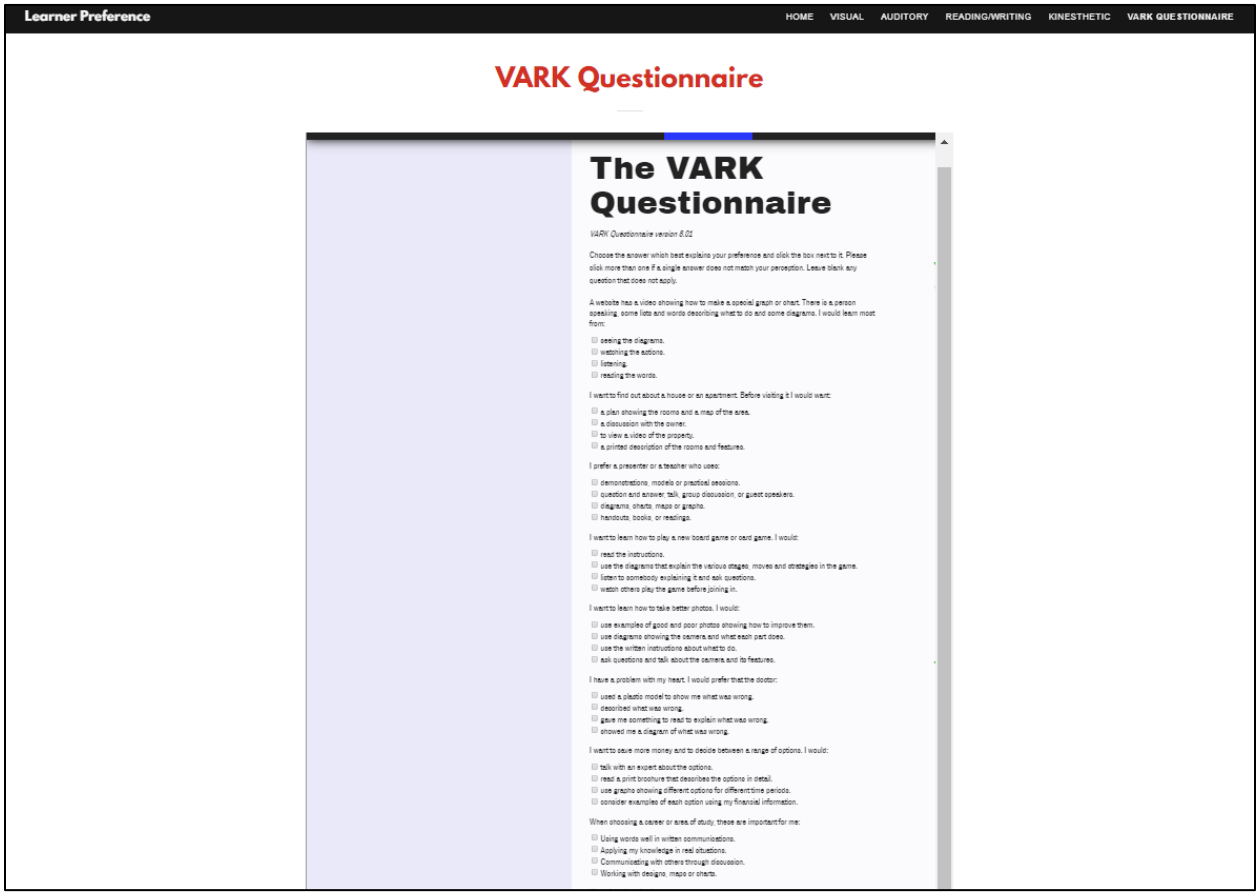

Figure 7: VARK Questionnaire – electronic iframe from VARK website

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