Chapter 17
Serendipitous Recommenders for Teachers in Higher Education

Ahmad Hassan Afridi

https://orcid.org/0000-0001-6761-1605
Institute of Management Sciences, Pakistan

ABSTRACT

Currently, most of the recommender systems that are in a prototype or deployed stage are primarily accuracy oriented. This chapter focuses on teacher preferences for designing serendipity-oriented recommender systems for academic activities. Reports on relevant literature about serendipitous recommenders and faculty empowerment with such tools, a focus group study of teachers for some industrial recommender system platforms, and a use case on instructor use of recommenders to inform and support recommendations for lectures are covered. Further, a survey of students to explore the feasibility of student-teacher serendipitous activities and operations are also reported. The results from all three studies show that serendipity has a major role to play in the future. The author surveyed the literature on standard digital libraries and used questionnaire-based data collection and standard statistical methods to evaluate the responses.

INTRODUCTION

Serendipity is characterized by surprise, an “aha moment” as described by Makri, Blandford, Woods, Sharples, & Maxwell (2014). If we are fortunate, we may encounter it often in our daily lives. Our day-to-day working and personal lives benefit from these “happy accidents” (López-Muñoz, Baumeister, Hawkins, & Álamo (2012) and experiencing serendipity has the potential to make our lives better. Existing secondary literature has described the usefulness of serendipity (McCay-Peet & Toms, 2015). Today, a broad range of information communication technologies present evidence of serendipity being facilitated digitally. As we discuss serendipity, we must understand that serendipity has many forms, meanings and still remains subjective from one user to another (Knijnenburg & Willemsen, 2015).

DOI: 10.4018/978-1-5225-8476-6.ch017
Serendipity in learning is new and only a few conceptual studies are available as studied by (Giordano, 2010; He, Parra, & Verbert 2016). These studies are mostly focused on digital libraries (Sugiyama & Kan, 2011). They have demonstrated the usefulness of serendipity in learning, however, most of these studies remain as software prototypes of laboratory experiments. Real-world examples of how serendipity can be useful are not available for teachers and it is thought that learning has never benefited from serendipity, resulting in little research (Liang, 2012). As we further explain the problems associated with serendipity, we must understand why learning has never benefited from its occurrence. First, serendipitous outcomes are not usually understood immediately and sometimes it may take time to fully understand the potential of the outcome (Yaqub, 2018). Second, the general mindset toward serendipity is that it is a matter of chance and it can neither be designed nor engineered (Thudt, Hinrichs, & Carpendale 2012).

Faculty members are helping students explore new horizons. In university environments, faculty help students find new research topics in a new and related area of work. In order to help students to further grow and to promote out-of-the-box thinking, finding new routes to approach existing problems requires “happy accidents.” This approach may be even more useful if there is a system that facilitates it. As it currently stands, encouraging and sustaining serendipitous moments in education depends on each individual teacher’s intellect and skills.

We are living in a world where teachers are increasingly utilizing technology (Shani & Gunawardana, 2011). Technology is being used by teachers via simulators, analytics systems, virtual reality systems, and animation, to name a few. From the classrooms to the labs, there is hardly a single field that has not harnessed the benefits of learning technology. In order to fully realize and take advantage of 21st-century learning, many technologies have attempted to make use of educational pedagogies to help faculty members steer the course of the classroom (Jivet et al., 2017). Many authors have worked it into learning technologies and there are ever-evolving mechanisms to develop novel teaching tools. Whether it is online open courseware (MOOC) or a physical classroom, technology-based learning is taking over traditional methods of teaching (Verbert et al., 2012). There are some systems, such as YouTube, Amazon, and reference management software that use recommender systems and have the potential to unleash serendipity for users. Traditionally, serendipity has been explored in technology via music, friends and so forth (Steck & Johnson, 2015).

Recommender systems are one of the learning technologies that can harness serendipity. Recommender systems are software programs that suggest interesting items to users (Manouselis, Drachsler, Verbert, & Duval, 2013). These recommender systems are embedded into conventionally available websites such as YouTube, Amazon and some reference management software systems, such as Mendeley, JabRef, etc., that provide useful recommendations to its users. These platforms are also used by teachers in different ways. In order to benefit from serendipity in an educational setting, we have to look for existing technology that can be used to experience it or develop a new way of using it. There is a strong potential for recommender systems to facilitate serendipitous information to teachers—which can be beneficial in a number of ways as it can automate the process of suggesting useful and novel information. While many recommender systems have attempted to offer serendipity in teaching (Giordano, 2010) there are no case studies that present teachers with such options or the user interface of such an information system.

Teachers’ experiences with serendipity are still unknown, and their understanding and use of it in teaching is an unstudied phenomenon. We are testing the water by conducting this study and by working on RecSys enabled with serendipity for learners (Drachsler, Hummel, & Koper, 2008). We are interested to know how teachers think about serendipity, if they have experienced it using commercial platforms,