Open Source Repository, Discovering Resources for Forensic Accounting Education - An Exploratory Approach

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Abstract: With the recent growing development of open education resources has opened up new avenues for education, learning and research. The open educational resources are offered universally with or without fee in the shape of courses or educational content regardless of credit hours or award of any degree or certificate. The typical societal paradigm, all leading world surveys indicate that we are living in a world, where white collar crimes and frauds are accelerating day by day. This has necessitated increasing the capacity of self-learners, students, educators and practitioners across the broad spectrum of jurisdictions confronting fraud must have an easy access to anti-fraud educational resources. The renowned universities around the world have responded to offer free or with nominal charges open anti-fraud education resources that can meet the modern day challenges of fraud, cyber-crime, and other white collar crimes.

Keywords: Open source, Open access, Open design, Open knowledge, Open data, Open content, Open courseware

Introduction
In software development, open source refers to a program in which the source code is available to the general public for use and/or modified version from its original design available free of charge. It offers freedom to run, to study and to change or redistribute copies with or without modifications. Open source primarily emancipates from price; therefore, it is termed as ‘open’. However, the universal access is facilitated via a free license of the product or blueprint. The open source software is created in order to serve, share and co-operate the community. In recent years, open source has grown in the technological community in response to proprietary software owned by corporations and business houses. Proprietary rights give exclusive ownership privileges to copyrights, licensing, and domains and restrict the rights of the designated user. In the increasing digitalized world, where economic resources are scarce, technology is costly and educational facilities are limited. With the passage of time, the importance of open knowledge resource is being increasingly felt in education, pedagogue, and learning. With the torrential downpour of white-collar crimes across the world, the necessity for forensic accounting education is much being recognized around the world. The purpose of open source forensic accounting resources is to provide greater access to self-learners, students, and educators in order to increase their proficiency and strengths. To combat the breadth and depth of the fraud problem, it is necessary to reinforce with requisite educational resources that can cope with effectively ever increasing the problem. The fight against white collar crime cannot be accomplished by the law enforcement agencies alone, even entrusted with fraud-fighting tools, techniques, and latest technology; it is more challenging task requires coordinated and concerted efforts of all stakeholders. The paucity of financial resources, lack of trained anti-fraud professionals and the shortage of anti-fraud educational resources are the key limitations in the field of forensic accounting and fraud examination. This creates the necessity of alternative source option of study that would stimulate participation, flexibility, and facilitation to potential students, self-learners, and educators.

OBJECTIVE OF THE STUDY
The aim of this study is to identify, recognize and correlate open source educational resources that can assist in educating, communicating and delivering anti-fraud educational endeavors. The criteria set by the NIJ-Funded Forensic Accounting Model Curriculum can reasonably meet with the Forensic Accounting deliverables in the form of open source courses offered by the renowned Universities of the world.
WHAT IS OPEN EDUCATION RESOURCES AND WHY OERS?

Open education resource (OERs) is the process of facilitating learning, or the acquisition of knowledge, skills, and beliefs. It is meant for general good and technology provides this opportunity to deliver knowledge. It is a purposeful human activity which is intended to learn. The approach of OER is to provide structured content that is easily accessible beyond formal educational context.

The William and Flora Hewlett Foundation, the donor that has been the primary champion of the OER movement, defines OER as: “teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials or techniques used to support access to knowledge” (William and Flora Hewlett Foundation, 2008).

The ‘open education resources’ (OER) covers a broad array of items. It embodies text, pictures, images or audio-visuals or an entire short course, and materials in any medium or in a combination. Currently most often used definition by the Organisation for Economic Co-operation and Development (OECD) has defined OERs as ‘digitized materials offered freely and openly for educators, students and self-learners to use and re-use for teaching, learning and research”. Added further, OER is said to include:

- **Learning content**: Full courses, courseware, content modules, learning objects, collections, and journals.
- **Tools**: Software to support the development, use, reuse and delivery of learning content, including searching and organization of content, content and learning management systems, content development tools, and online learning communities.
- **Implementation resources**: Intellectual property licenses to promote open publishing of materials, design principles of best practice and localize content (Hylén, 2006, p. 49).

Figure 1.1: Open educational resources: a conceptual map
OERs are usually offered as a web-based free publication of course or material. It has a distinguishing permanent feature which aims to provide open educational resources designed as courses to the world at large. It does not grant credit for any course, nor does it award any degree. It depends upon the course, whether the certificate is issued with or without the nominal fee. There is no registration or enrollment process involved as it is the prerequisite for admission to higher education. The learning materials can be accessed at no cost and the learning community should work through the materials at their own pace, and in whatever manner they desire. Since it does not award the degree, it just supports the dynamic classroom interactions of an education. The free online education resources are abundantly available from top universities. These institutions offer many of their courses in the form of video lectures, audio transcripts, and online quizzes. And, some universities give access to the professor and allow interaction with other students who participate in the class.

The courses have been offered with numerous nomenclatures and they are identified as distance learning, supported self-study, computer-based training/computer-aided instruction, home study, and flex-study, to name a few, have been used to define self-taught, self-instruction or self-study.

HISTORICAL OVERVIEW OF OPEN LEARNING RESOURCE
The origin of the concept of open educational resources is a fairly recent phenomenon. The term ‘open learning resources’ was coined by United Nations Educational, Scientific, and Cultural Organisation (UNESCO) in 2002 and as an open education concept level, making education universally available (Caswell et al., 2008) and it embraces open courseware but would also include any educational materials, technologies, and resources such as open licensing of content, structure and learning goals, are offered freely and openly for anyone to use and under some license to remix, improve and redistribute. Open learn is an example of a collection of OERs. The term ‘open content’ was first used by David Wiley, an academic from Utah State University and a key figure in galvanizing the OERs movement. The term open content refers to all types of materials such as music, video, text, and others that are available for use under an open, ‘some rights reserved’ copyright license that enables people to use, adapt and share the materials. There are a number of different types of open license and so the content may be ‘open’ but not necessarily free to use as one assumes.

The UK Open University is the world’s leading provider of flexible online degrees and distance learning or sometimes it is referred to e-learning. The Open University has preferred to use the term ‘supported open learning’.

Open Courseware Consortium is a milestone collaboration of more than 100 higher education institutions. The aim of the alliance is to offer free and open digital publication of high-quality educational materials in the shape of courses to the learning community across the globe. In 2001, MIT has taken an initiative to become the first university that placed the teacher-defined support materials from its undergraduate and graduate courses online, in MIT Open Courseware.

The Massive open online course (MOOC) phenomenon is in its embryonic stage. In most of the courses, platforms are innovative in approach by using interactive technology and promoting wider cooperation and collaboration. This is certainly a beginning to change as University endowment resources and venture capital funds are moving into online learning platforms. The public universities are seeking new ways to reach a wider audience, who may be interested in learning within their comfort zones. These institutions of higher learning offer the state of the art learning model, wherein people choose to learn from the world’s best professors, qualified industry experts, and research associates.

THE PEDAGOGY OF OPEN LEARNING
One of the key aspects of open learning, the student is remotely placed from the teacher, and a learner just reading a textbook or looking up information on the internet, it stimulates the necessity to encourage active learning. Whether the material is the text, online quizzes or audio-visual features, the learner should not be a passive absorber of information but actively interact with the resources. The pedagogical learning is grounded as how the people learn in different circumstances.

TRAITS OF A GOOD OER
The following are the qualities of a good OER. (i) Findability—describes it can be in multiple locations, (ii) clearly described (iii) clearly licensed (iv) reliable source (v) easy to change (vi) free-standing— it does not assume knowledge of other resources (vii) free of copyright content (viii) being used by/ recommended by diverse group of people (ix) imperfect – it just needs to work for us. (Open Learn, 2015).

ISSUES AND CHALLENGES OF OER
The overwhelming evidence suggests that the take-up of OER by an instructor is minimal. Normally
OER is criticized on the grounds of the poor quality of available resources such as PowerPoint presentations, lecture notes, reams of text with no interaction, often available in PDFs that cannot easily be altered, adapted or modified. Even some of the simulations available are cruelly made with poor graphic, images, and design that fails to come up with clear academic concepts are meant to demonstrate.

The course in many instances may barely provide opportunities for active learning. The quality of the videos can just be characterized as ordinary and sometimes are bereft of the required content and hardly has covered the core of the topics. The quiz that is repeated at the end reveal all answers; therefore, there is no point to take up the exam. Some of the links don’t work properly. The process and outcome of assessment are not considered robust.

NEED FOR FORENSIC ACCOUNTING AND FRAUD EXAMINATION COURSE

With the upsurge of financial scandals in public or private sectors at the global stage has brought attention to white collar crimes and fraud problems. The growing scandals have contributed to the growing demand for anti-fraud examiners and forensic accountants. New rules of the game proposed new standards were regulated and anti-fraud laws were enacted to strengthen the legal and regulatory environment in order to fight fraud effectively. Leaders in the accounting profession began to call for forensic accounting education to be provided for accounting students (Melancon, 2002). In response to high-profile fraud cases and changing accounting environment, the accounting profession began to respond by providing forensic accounting and fraud examination education.

THE NIJ-FUNDED FORENSIC ACCOUNTING MODEL CURRICULUM

In 2003, West Virginia University (WVU) with an award from the U.S. Department of Justice’s National Institute of Justice, embarked on a mission to develop a model curriculum covering the requisite foundational skills in the emerging discipline of fraud examination and forensic accounting. WVU assembled a network of 46 subject-matter experts from across the United States represented the broad spectrum of corporate and security fields. Working together WVU produced its model curriculum report “Education and Training in Fraud and Forensic Accounting: A Guide for Educational Institutions, Stakeholder Organizations, Faculty and Students”, this report can be attained from University website (WVU, 2007). The key goal of the study was to develop a common body of knowledge in forensic accounting and assist with model curriculum design of forensic accounting in order to simplify and unify the related curriculum and content delivery.

The WVU project involved the participation of a technical working group comprised of 46 subject-matter experts representing a variety of professional organizations to identify the knowledge, skills, and abilities needed by forensic accountants and, consequently, to assist educators in developing appropriate related course content and programs (Kranacher et al., 2008). A broad array of subject experts from different disciplines have strenuously worked together for two years to develop educational guidelines for fraud investigation and forensic accounting education, which are categorized as prerequisite knowledge, core fraud and forensic accounting exposure, and in-depth fraud, but little forensic accounting material (WVU, 2007). A handful of universities and colleges were offering courses with the varying description, titles, learning objectives, the limited content of forensic accounting, and course requirements. The coverage in the forensic accounting courses in the accounting curricula was not well defined.

Seda and Kramer (2009) surveyed accounting educators and found 48 colleges or universities offered a separate forensic accounting course; 11 offered a separate forensic accounting track; 48 integrated coverage through accounting and auditing courses; and 36 did not cover forensic accounting at all. However, Seda and Kramer (2014) have found that globally 447 colleges and universities offer a single forensic accounting course, 81 offers a forensic accounting certificate or degree program, and 106 offer a forensic accounting concentration or minor. The scenario demonstrates to the continued increase in the forensic accounting courses worldwide.

In order to develop model curriculum, the participants in technical working group (TWG) have identified the knowledge, skills, and abilities needed by forensic accountants and, consequently, to assist educators in developing appropriate related course content and programs (Kranacher et al., 2008; Pearson and Singleton, 2008; WVU, 2007).

The TWG provided definitions of the following related but different terms: forensic accounting, fraud, fraud examination, fraud investigation, fraud prevention, fraud deterrence, fraud detection, and fraud remediation (a quasi-broad approach). Further, in clarifying a difference between forensic accounting and fraud investigation, the report noted:
....allegations of fraud are often resolved through court action that may include calculated estimates of losses (damages), suggesting that fraud investigation and forensic accounting often overlap. However, both encompass activities unrelated to the other: fraud professionals often assist in fraud prevention and deterrence efforts that do not directly interface with the legal system, and forensic accountants work with damage claims, valuations, and legal issues that do not involve allegations of fraud (WVU, 2007, p. 4).

The TWG decided that the prerequisite knowledge for forensic accounting education is obtained in any traditional accounting curriculum (e.g., basic accounting concepts, such as debits and credits, key financial ratios, the basic financial statements and note disclosure; basic auditing concepts, such as types of audit evidence, professional skepticism, auditing standards, transaction cycles, and internal controls; basic computer skills, such as familiarity with Word, Excel, and PowerPoint; basic business law knowledge, such as the role of the justice system, civil and criminal matters, contract law, and securities law; business ethics; and basic oral and written business communication skills). However, students without an accounting background (e.g., criminal justice) will need to obtain the prerequisite knowledge prior to moving into the specific forensic accounting/fraud investigation curriculum. Figure 1 provides a general overview of the model forensic accounting curriculum as developed by TWG (essentially a quasi-narrow approach versus the broad approach). Others have called for even a broader approach (Crumbley et al., 2007).

**Figure: 2 The NIJ-Funded Forensic Accounting Model Curriculum Overview**

1. Criminology; Legal, Regulatory, and Professional Environment; Ethical Issues
   2. Fraud and Forensic Accounting
      Core Foundation for Fraud and Forensic Accounting
      Definitions of Fraud and Forensic Accounting
      Professional Roles: Auditors, Fraud Professionals, and Forensic Accountants
      Basic Concepts of Fraud
      The Antifraud Mindset
      Forensic Accounting Engagements
      Asset Misappropriation, Corruption, and False Representations
      Prevention and Deterrence
      Fraud Detection: Risk Assessment, Testing of and Reliance on Internal Controls, and Proactive Auditing Procedures
      Fraud investigation Methods and the Organization and Evaluation of Evidence
      Reporting
      Remediation
      Financial Statements
      Financial Accounting and Auditing
      Prevention and Deterrence
      Fraud Detection: Risk Assessment, Testing of and Reliance on Internal Controls and Proactive Auditing Procedures
      Fraud Investigation Methods and the Organization and Evaluation of Evidence
      Reporting
      Remediation
      Special Legal and Regulatory Issues
      Fraud and Forensic Accounting in a Digital Environment
      Prevention and Deterrence
      Digital Evidence
      Detection and Investigation
      Reporting
      Cybercrime
   3. Forensic and Litigation Advisory Services
      Definition of Forensic and Litigation Services Overview of Services Research and Analysis
      Damages
      Valuations
      Working Papers
      Reporting
The TWG identified the following primary content areas for fraud and forensic accounting curricula:

1. Criminology, specifically oriented to the nature, dynamics, and scope of fraud and financial crimes; the legal environment; and ethical issues.

2. Fraud prevention, deterrence, detection, investigation, and remediation:
   - Asset misappropriation, corruption, and false representations.
   - Financial statement fraud.
   - Fraud and forensic accounting in a digital environment, including:
     - Computer-based tools and techniques for detection and investigation.
     - Electronic case management tools.
     - Other issues specific to computerized environments.

3. Forensic and litigation advisory services, including research and analysis, valuation of losses and damages, dispute investigation, and conflict resolution (including arbitration and mediation).

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**Figure 1.1 Prerequisite knowledge and skills in undergraduate accounting curriculum**

<table>
<thead>
<tr>
<th>Basic accounting:</th>
<th>Basic auditing concepts:</th>
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<tbody>
<tr>
<td>• Basic financial statements and note disclosures.</td>
<td>• Professional skepticism.</td>
</tr>
<tr>
<td>• The effects of debits and credits on account balances.</td>
<td>• Relevant auditing standards.</td>
</tr>
<tr>
<td>• Account analysis.</td>
<td>• Professional and regulatory bodies.</td>
</tr>
<tr>
<td>• Computation of key financial ratios, common size financials, etc.</td>
<td>• Types of audit evidence.</td>
</tr>
</tbody>
</table>

| Basics of transaction processing cycles and internal controls, including computer-based information system controls |
| Basics of business law |
| Basic Computer Skills |

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**Figure 1.2 Exposure Materials / Course**

Core Fraud and Forensic Accounting
- Definition of fraud
- Definition of forensic accounting
- Business ethics
- Basic discussion of the roles of auditors, fraud professionals, and forensic accountants
- Overview of who commits fraud and why, and the fraud triangle:
  - Pressure.
  - Opportunity.
  - Rationalization.

Overview of the elements of fraud:
- Act.
- Concealment.
- Conversion.

Discussion of fraud prevention, deterrence, detection, investigation, and remediation

Overview of common fraud acts, including asset misappropriations and fraudulent financial reporting
Discussion of ‘red flags’

Discussion of fraud remediation: criminal and civil litigation, and internal controls

Discussion of types of forensic and litigation advisory

Figure 1.3 In-depth Course Materials

| a. Criminology; Legal, Regulatory, and Professional Environment; Ethical issues; |
| b. Fraud and Forensic Accounting: |
|   - I. Asset Misappropriations, Corruption, and False Representations |
|   - II. Financial Statement Fraud |
|   - III. Fraud and Forensic Accounting in a Digital Environment. |
| c. Forensic and Litigation Advisory Services. |

Source: (WVU, 2007)

**BENEFITS OF A FORENSIC ACCOUNTING AND FRAUD EXAMINATION COURSE**

Buckhoff and Schrader (2000) noted that adding a course in forensic accounting benefits the three major stakeholders in education: 1) academic institutions; 2) students; and 3) employers. Academic institutions benefit because they are offering a relevant course that implements many of the recommendations of both the Accounting Education Change Commission (AECC) and the American Assembly of Collegiate Schools of Business (AACSB). Students benefit because they are acquiring marketable skills and knowledge and because they are being exposed to another potential career path. Employers benefit because the graduates available to them possess skills and knowledge, which are more consistent with their needs. Kranchner (2005) pointed out that a working group at West Virginia University recommended that the basic core foundation of knowledge needed for an individual to enter this profession, and that every introductory course should address the: legal elements of fraud, fraud motivators, types of fraud, types of perpetrators, laws related to fraud, fraud prevention, detection, and investigation techniques, basic skills for gathering, analyzing, and reporting information, ethical conduct in investigations, occupational opportunities in the field of fraud, and ways to avoid becoming a victim of fraud.

**LEADING ANTI-FRAUD CERTIFICATIONS**

There is growing depth and scope of fraud detection, risk management, corporate investigations, due diligence and forensic accounting education throughout the world. As a result, there is a need for courses or educational resources to be offered to acquaint and prepare students and self-leaners to meet the mounting needs of business, government and non-profits. This study primarily discusses the relationship of the educational resources being offered in forensic accounting and fraud examination as anti-fraud resources and delivery of educational materials and courses in the shape of open learning repositories. The elements of anti-fraud education can be judged from contents of the certifications of major anti-fraud professional bodies such as Association of Certified Fraud Examiner Inc. USA (ACFE), the American Institute of Certified Public Accountant, USA (AICPA), and the American College of Forensic Examiners International, USA (ACFEI). These professional bodies offer the certifications which are called respectively, Certified Fraud Examiner (CFE), Certified in Financial Forensics (CFF), and Certified Forensic Accountant (Cr.FA). There is a host of other anti-fraud certifications invariably available, but we will keep our scope of study limited to the range of these certifications. These anti-fraud certifications test the knowledge of a candidate in a fairly broad range of topics.

(i) CFE certification covers the broad examination in four core areas which encompasses fraud prevention and deterrence, financial transactions, fraud investigation and legal elements of fraud.

(ii) CFF certification is aimed to specialize in forensic accounting services including bankruptcy, insolvency and reorganization, computer forensic analysis, economic damages calculations, specific accounting knowledge such as family law, fraud prevention, detection, and response; financial statement misrepresentation and the valuations.

(iii) Cr.FA certification ensures background knowledge of forensic accounting services and topics comprise judicial procedure and evidence, provision of expert testimony, approaches to fraud detection, damages determination, and the valuation.
This study is primarily focused on the relationship of the offerings freely available in forensic accounting and fraud examination educational resources and applications in the shape of open learning course contents/materials. In this study, the exploratory approach is used to determine how likely it is for the results obtained from the sample to be similar to results expected from the overall population. The qualitative research method is used to provide an in-depth perspective and attempts to provide a context in which the results can be understood and to analyze the links that exist. The target population for this study is included major open source repositories on the internet. According to Kothari (2004), a sample of 30 is adequate for a research. Therefore, a sample size of 30 open sourced courses has been selected for this study. Purposeful sampling technique was used to select the 30 open sources courses out of more than 500 courses for the study. The technique is preferred since it gives the representation of all the elements in a population in the study. Data collected is collated, coded, summarized and then analyzed by using the qualitative method. Qualitative data is analyzed using content analysis where data is organized into themes in line with the objectives of the study. The data will then be analyzed for patterns and then interpreted. Microsoft Word is used to help in data analysis. Findings were presented by using table and qualitative analysis of the findings and finally, conclusions were derived from the findings.

**RESEARCH FINDINGS**

Findings reveal that central themes developed by NIJ-Funded Forensic Accounting Model Curriculum which further classified into underlying themes of forensic accounting and fraud examination have broadly covered the foundational skills and knowledge in the open source course contents offered by online university courses. Forensic Accounting Model Curriculum can effectively meet the objectives of building a common body of knowledge in forensic accounting and fraud examination, the content delivery and can assist educators in developing appropriate course content/materials. The development and dissemination of open learning resources related to the emerging discipline of forensic accounting and fraud examination are readily and publicly available to the global community. The open learning sources or applications are offered to acquaint and prepare learners or self-leaners to meet the mounting anti-fraud requirements of the companies, government, and non-profits. This invariably represents that the global fight against white collar crimes and fraud can be fought with greater knowledge, skills and educational resources to a wider audience at the global scale.
CONCLUSION
With the upsurge of financial scandals in public or private sectors at the global stage has brought attention to white collar crimes and widespread fraud problems. The study conducted by West Virginia University in collaboration with the U.S. Department of Justice's National Institute of Justice, embarked on a mission to develop a model curriculum covering the requisite foundational skills in the emerging discipline of fraud examination and forensic accounting. The key goal of the study was to develop a common body of knowledge in forensic accounting and assist with model curriculum design of forensic accounting in order to simplify and unify the related curriculum and content delivery. That the open source information is abundantly and publicly available online and the materials in the shape of recognized course contents are properly researched, analyzed and verified education resources. These resources can fulfill the requirements of the learning objectives of the themes of the study and adequately equip the students with the requisite skills and knowledge in order to utilize it accurately and in ethical ways. The findings of this qualitative study by using content analysis indicates that it broadly covers the knowledge base in the contents required in the NIJ-Funded Forensic Accounting Model Curriculum and can be met forensic accounting and fraud examination deliverables in the form of open educational resources.

RECOMMENDATION
There is a proliferation of open source educational resources and the availability of educational materials in the form of properly researched, analyzed and verified contents scattered across the networks. The relevant course materials can meet the requirements of NIJ-Funded Forensic Accounting Model Curriculum and can increase the understanding, knowledge, and skills of the students, learners and practitioners across the world. This has necessitated pulling together all or predominantly the major free educational resources to a centralized repository, the objective can be accomplished by establishing a free learning resource portal solely dedicated to the delivery of forensic accounting and fraud examination free education resources readily and publicly accessible to the global community.

REFERENCES


Appendix A: Main Search Engines for Open Educational Resources

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Jorum - UK</td>
<td>Higher &amp; further education and the Skills sector.</td>
<td><a href="http://www.jorum.ac.uk/">http://www.jorum.ac.uk/</a></td>
</tr>
<tr>
<td>Jisc- UK</td>
<td>Open-educational-resources</td>
<td><a href="https://jisc.ac.uk/guides/open-educational-resources">https://jisc.ac.uk/guides/open-educational-resources</a></td>
</tr>
<tr>
<td>Wikipedia</td>
<td>MOOC description</td>
<td><a href="https://en.wikipedia.org/wiki/Massive_open_online_course">https://en.wikipedia.org/wiki/Massive_open_online_course</a></td>
</tr>
<tr>
<td>Open Culture</td>
<td>1200 free online courses</td>
<td><a href="http://www.openculture.com/freeonlinecourses">http://www.openculture.com/freeonlinecourses</a></td>
</tr>
<tr>
<td>OpenStax</td>
<td>free educational material in small modules</td>
<td><a href="http://cnx.org/">http://cnx.org/</a></td>
</tr>
<tr>
<td>Academic earth</td>
<td>free educational courses of various universities</td>
<td><a href="http://academicearth.org/universities/mit/">http://academicearth.org/universities/mit/</a></td>
</tr>
</tbody>
</table>

Appendix B: The following open educational resources cover the broad study objectives of the NSJ Forensic Accounting Model Curriculum:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Open Courseware</th>
<th>Course source</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) Principles of Financial Accounting</td>
<td>University of Alaska Anchorage</td>
<td><a href="http://faculty.cbpp.uaa.alaska.edu">http://faculty.cbpp.uaa.alaska.edu</a></td>
</tr>
<tr>
<td>(3) Financial Analysis &amp; Decision Making</td>
<td>Tsinghua University</td>
<td><a href="https://www.edx.org/">https://www.edx.org/</a></td>
</tr>
<tr>
<td>(7) Introduction to Law and the legal profession</td>
<td>Open College @ Kaplan University</td>
<td><a href="https://opencollege.kaplan.com">https://opencollege.kaplan.com</a></td>
</tr>
<tr>
<td>(8) Crime, Justice &amp; Society</td>
<td>The University of Sheffield</td>
<td><a href="https://www.futurelearn.com/">https://www.futurelearn.com/</a></td>
</tr>
<tr>
<td>(9) Advanced Communication Skills</td>
<td>Middle East Technical University</td>
<td><a href="http://ocw.metu.edu.tr">http://ocw.metu.edu.tr</a></td>
</tr>
<tr>
<td>(10) Introduction to Fraud</td>
<td>Udemy</td>
<td><a href="https://www.udemy.com/">https://www.udemy.com/</a></td>
</tr>
<tr>
<td>(11) Analysis of Criminal Behavior</td>
<td>Udemy</td>
<td><a href="https://www.udemy.com/">https://www.udemy.com/</a></td>
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<tr>
<td>(12) Transparency and Anti-corruption</td>
<td>Udemy</td>
<td><a href="https://www.udemy.com/">https://www.udemy.com/</a></td>
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<tr>
<td>(14) Fraud Analytics: Case study using Logistic Regression</td>
<td>Udemy</td>
<td><a href="https://www.udemy.com/">https://www.udemy.com/</a></td>
</tr>
<tr>
<td>(15) Insights into cybercrime and electronic evidence</td>
<td>Udemy</td>
<td><a href="https://www.udemy.com/">https://www.udemy.com/</a></td>
</tr>
<tr>
<td>(16) Forensic Accounting</td>
<td>West Virginia University</td>
<td><a href="https://www.coursera.org">https://www.coursera.org</a></td>
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</table>
## Appendix C: Hierarchical Analysis of Data: Overview of Themes

<table>
<thead>
<tr>
<th>Prerequisite Knowledge</th>
<th>Underlying Themes</th>
<th>Online Free Course Coverage</th>
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<tbody>
<tr>
<td><strong>Central Themes</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Exposed</strong></td>
<td>Fraud, Ethics, Fraud Prevention, detection, investigation and remediation. Cyber Crimes, Computer Forensics Internal controls, criminal and civil litigation.</td>
<td>Introduction to Fraud; Analysis of Criminal Behavior; Business Ethics; Forensic Accounting &amp; Fraud Examination; Introduction to Law and the legal profession; the civil procedure and criminal procedure; Insights into cybercrime and electronic evidence; Introduction to Computer Forensics and Investigation; and Criminal Investigation in the New Millennium.</td>
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