

PROJECT REPORT

TRANSPARENT EDUCATION DATA MANAGEMENT

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PROJECT NAME	TRANSPARENT EDUCATION DATA MANAGEMENT

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Abstract

Over recent years, transparency has become a quality management priority and a major concern for organisations in many fields. Accountability claims for more transparency are particularly relevant in the public administration context, where transparency is a central element of the Open Government agenda. For educational institutions, if participation and collaboration are to be enhanced, increasing transparency is an important requisite. Consequently, it would be reasonable to expect that academic literature would reflect this transparency appeal to educational organisations.

The aim of the current paper is twofold: firstly, to identify and characterise the articles published in education journals with a particular focus on management issues that address transparency and; secondly, to analyse the understanding of transparency embedded in such articles, looking at the object of transparency and its purposes.

As the number of articles identified indicates, transparency is still not a crucial subject in the publications analysed. Yet, transparency seems to be clearly associated with some core routines and processes of educational institutions, such is the case of student assessment. Transparency of quality mechanisms and frameworks is also an important research topic. Overall, transparency is being regarded as essential to enhance trust in the education system at all levels.

Keywords

transparency; accountability; open government; educational institutions; education management; thematic analysis

1. Introduction

Government transparency is not a new issue. Meijer for instance, made an historical analysis of 250 years of government transparency in the Netherlands and identified four major periods which marked its evolution. From his analysis, Meijer identified two distinct phases where government transparency is closely associated with two different conceptions of democracy: while in the first phase government transparency occurs within a context of *representative democracy*, more recently the idea of government transparency is closely associated with a *participatory democracy*.

This latter conception of government transparency within a *participatory democracy* is reflected in the more recent emphasis on Open Government, which occurred both in the US (Obama, 2009) and in the EU (European Commission, 2009). Linders and Wilson (2011) unpacked the concept of Open Government as promoted through the US Open Government Memorandum and Directive, and clearly identified *transparency* as one of its three major goals.

Earlier, Armstrong (2005) had defined *transparency* in the context of as the “unfettered access by the public to timely and reliable information on decisions and performance in the public sector.” This concept was further detailed by Heald (2006) who identified four directions of transparency (upwards/downwards, outwards/inwards) and three dichotomies: transparency in retrospect versus transparency in real time; nominal versus effective transparency; and event versus process transparency. The latter (“the objects of transparency” or “what is to be viewed” (Heald, 2006)) can be further disaggregated to distinguish between three types of events (*inputs*, *outputs*, or *outcomes*), while process transparency can focus on procedural or operational aspects concerning the two types of processes that link such events.

In what concerns the purpose of transparency, once again the analysis of Linders and Wilson (2011) concerning the US Open Government Directive establishes a simple but clear distinction. Government transparency, mainly effected through “public accessibility to government information” (Linders and Wilson, 2011), may serve two purposes: to make available data which could be reused by external third-parties for its social or economic value; and to support public accountability. In this paper, we are mostly interested in the latter. Bovens (2007) provided a concise definition of *accountability* as “the obligation to explain and justify conduct” and, accordingly, stated that government transparency is a prerequisite for public accountability, since without having “access by the public to timely and reliable information on decisions and performance in the public sector” is not possible for citizens to hold public officials and government institutions accountable for their actions (Armstrong, 2005).

Worldwide, educational institutions face increasing pressures to be more open and communicate more with stakeholders. In the United States, the Open Government initiative also embraces the education field, with schools being required to develop their own plan (US Department of Education, 2014).

Key (1999, cited in Foster and Jonker, 2007, p. 691), stresses, that organisations develop a set of “reciprocal contractual rights and duties (...) with different stakeholders”. By their own nature, educational institutions extensively interact with a diversity of stakeholders (government, regulators/agencies, institutions that operate at other levels of the educational system, financiers, employees, local businesses, etc.). People tend to be more willing to interact with organisations they know and trust. Transparency is commonly regarded as a key requisite for the changes between the school/university and these stakeholders to properly work.

Furthermore, transparency can also enhance collaboration between actors and make the joint work more effective and efficient. Transparency helps to clarify the mutual benefits that

are at stake and that justify stakeholders' participation and collective action (Foster and Jonker, 2007).

In the vast majority of the developed countries, significant public resources are allocated to education. In exchange, accountability concerns are high. Accordingly, from the public policy point of view, there are growing demands for information disclosure regarding the quality of individual study programmes, faculties and higher education institutions (Costes et al., 2010). International agencies acknowledge that stakeholders are the targets of information disclosure. Moreover the European Association for Quality Assurance (ENQA) report highlights, employers, for instance, are interested in information about the efficiency of higher education institutions (graduation rates, employability rates, and student learning outcomes) (Costes et al., 2010, p. 6). The ENQA equally acknowledges that "people need information in the reliability of quality assurance agencies and whether they are functioning according to the European Standard Guidelines" (Costes et al., 2010, p. 6).

Given the importance of transparency to educational institutions (and to the system as a whole) and the complexity associated with it, one would expect the academic literature on education management to reflect such concerns.

In this context, the aim of the current paper is twofold: firstly, to identify and characterise the articles published in education journals with a management focus that address transparency and; secondly, to analyse the understanding of transparency embedded in such articles, looking at the object of transparency and its purposes.

To fulfil this goal, a systematic literature study was carried out based on a pool of published articles in indexed journals that fitted the search criteria. Then, based on the abstracts of such articles, a thematic analysis was conducted, which led to the emergence of a set of themes. Such themes were then structured by means of an affinity diagram.

The remainder of the paper is organised as follows: in the next section, the general research design is presented and the associated methods described. Next, in section 3, the main findings of the literature study are characterised, both in terms of elementary bibliometric indicators and emergent themes. Finally, in the conclusion, the main contribution of the study is highlighted, as well as its potential limitations, leaving room for further research on the subject.

2. Research methodology

With the aim of identifying papers that address transparency in the educational context and understanding the themes and meanings associated with it, a systematic literature study was conducted. The study comprises two main stages:

- (1) the definition of the pool of papers to be considered; and
- (2) the analysis of the papers based on their abstracts. Figure 1 below explains our methodological approach.

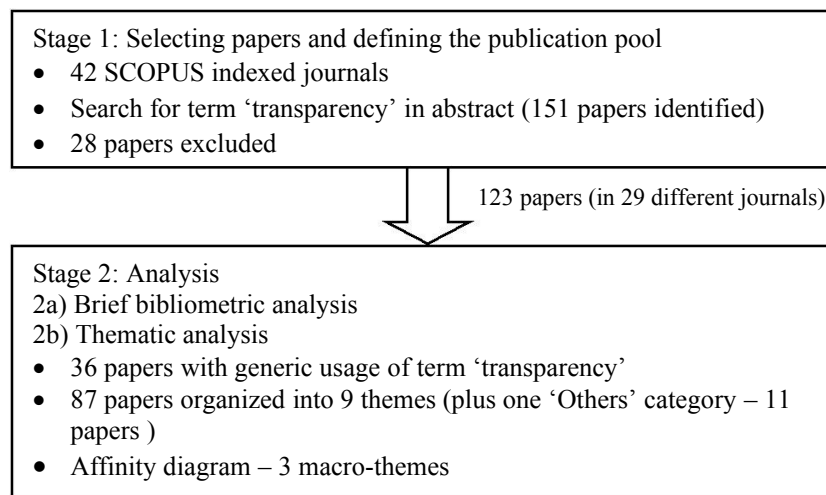
Since the purpose of the current paper was mainly that of understanding how transparency is being regarded in the education management literature, and therefore of qualitative nature, the bibliometric analysis carried out was relatively simple. It aimed merely at characterising the papers identified in terms of where they have been published and when (without analysing their impact). In rigour, bibliometric analysis belongs to a set of quantitative methodologies with a view to analyzing quotations in articles in scientific journals to assess the impact of publications (Nederhof, 2006).

In order to frame the search, the most recent database of SCOPUS indexed journals was used¹. Within this database, only education management journals with an international focus

¹ From <https://www.elsevier.com/solutions/scopus/content> (last visited 08-07-2016)

were selected for analysis, which means that journals classified under the ‘education’ subject but with an emphasis on pedagogy or journals specifically dedicated to a region (such as Latin America, for instance) were discarded. Based on these criteria, 42 journals were considered.

Figure 1. Diagrammatic representation of the research stages



Within the official webpages of each journal, the following search procedure was applied: look at the word ‘transparency’ in the abstracts of the papers, without any chronological filter. The process took place in early June 2016 and resulted in the identification of 151 articles. It is worthwhile to mention that nine journals had no hits on the term ‘transparency’ (see Table 1). The list includes journals specifically dedicated to assessment in education and to leadership matters, where one would expect transparency to be a major concern.

Table 1. Journals with no hit on the term ‘transparency’

Journal
Journal of Higher Education
Journal of Marketing for Higher Education
Review of Higher Education
Educational Evaluation and Policy Analysis
Educational Assessment
Educational Assessment Evaluation and Accountability
Improving Schools
Leadership and Policy in Schools
Review of Research in Education

When looking at the abstracts, 28 papers were excluded, since they mentioned transparency ‘off-topic’, for example as a requirement of the research methods employed in the study. Table 2 lists the journals with all papers excluded and that consequently do not appear in the findings.

Table 2. Journals with all papers excluded

Journal
Educational Administration Quarterly
Educational Research Review

Within the bibliometric analysis, the units of analysis were therefore the 123 articles, and the variables corresponding to the title, abstract, journal and year of publication. A descriptive analysis of the articles resulting is made in the next section, resorting above all to graphic methods and frequency tables.

Following this brief bibliometric analysis, a thematic analysis of the papers was performed based on the careful reading of the abstracts content. Thematic analysis is a search for themes that emerge as being important to the description of the phenomenon (Daly et al., 1997). Boyatzis (1998) defined a theme as, “a pattern in the information that at minimum describes and organises the possible observations and at maximum interprets aspects of the phenomenon” (p. 161). The process involves the identification of themes through “careful reading and re-reading of the data” (Rice and Ezzy, 1999, p. 258); while Fereday and Muir-Cochrane (2006) considered it “a form of pattern recognition within the data, where emerging themes become the categories for analysis” (p. 82). In this study, the extracted texts (abstracts) were read and read by two of the authors (the primer “coders”) until it was felt that theme saturation had been reached. The other author reviewed all abstracts and resulting themes to enhance reliability.

In order to better understand the meanings of transparency that were behind the themes identified, an affinity diagram was built. Affinity diagrams are useful tools to summarise and make sense of qualitative data in a creative way (Akao et al., 1995). Data are grouped according to their semantics and associations among groups of ideas are explored. For that purpose, the researchers’ team carried out a small exercise, where, following the affinity diagram rules and through an iterative process, broader categories of transparency themes have emerged and the relationships among them discussed.

As Akao (1995) proposes, the process of building an affinity diagram typically involves the following stages:

- Forming a team of three to six elements;
- Selecting the topic/problem to be addressed and writing it in a visible spot;
- Writing a certain number of statement of facts in post-its;
- Arranging facts in groups that reflect similar ideas and choosing headers for such groups;
- Analysing possible relationships among the groups and showing them in a visual way.

Taken together, these analysis procedures have contributed to get an overall picture of how transparency is being addressed in the educational management literature.

3. Findings

In line with the main goals of the current study, this section presents the key findings organised into two parts. First, the articles analysed are characterised, essentially looking at where and when they were published. Following this brief bibliometric analysis, the outcomes of the thematic analysis are described. In this regard, in section 3.2.1, the affinity diagram is presented, with the themes that have emerged from the reading of the abstracts grouped into major areas of transparency and their potential connections discussed. Finally, in section 3.2.2., each of the theme is described in greater detail.

3.1. Brief bibliometric analysis

Table 3 presents the pool of papers characteristics that resulted from the application of the search procedures to the selected SCOPUS indexed journals, as described in the previous section. As it can be observed, the 123 papers that were considered for analysis were published in 29 different journals.

Moreover, Table 3 depicts the number of papers classified into each of the nine themes that resulted from the thematic analysis and which will be described later in this section. It is important to notice that 36 papers were classified as “generic” since, when reading their abstracts, it was not possible to associate the use of the word ‘transparency’ with any specific issue (i.e. it was hard to link it with any object of transparency) and therefore were not associated with any of the nine themes. In the vast majority of these ‘generic’ cases, transparency was simply mentioned as a vague requirement to be taken into account.

Table 3. Papers considered for analysis (N = 36+87 = 123)

Journal	Generic	Themes										
		1A	1B	2A	2B	2C	3	4	5A	5B	6	Sub Total
Assessment & Evaluation in Higher Education	0	2	0	0	0	0	1	0	11	1	2	17
Higher Education	2	0	2	0	1	0	0	1	0	0	1	5
Higher Education Policy	1	0	0	0	0	0	1	0	0	0	0	1
Higher Education Quarterly	0	0	0	0	1	0	0	0	0	0	0	1
Higher Education Research & Development	3	0	0	0	1	0	0	0	2	0	1	4
Perspectives: Policy and Practice in Higher Education	1	0	0	1	0	0	0	0	1	0	0	2
Quality in Higher Education	6	1	1	0	0	0	0	7	0	0	0	9
Research in Higher Education	0	0	0	1	0	0	0	0	0	0	0	1
Studies in Higher Education	1	0	0	0	0	0	0	1	2	0	0	3
Assessment in Education: Principles, Policy & Practice	0	1	0	0	0	0	0	0	2	1	1	5
Education Policy Analysis Archives	0	0	1	1	0	0	0	0	0	0	0	2
Educational Management Administration & Leadership	2	0	0	0	0	0	1	1	0	0	0	2
Educational Policy	0	0	1	0	0	0	0	0	0	0	0	1
Educational Researcher	0	1	0	0	1	0	0	0	0	0	0	2
European Journal of Education	1	0	1	0	0	0	0	2	0	0	4	7
Harvard Educational Review	1	0	0	0	0	0	0	0	0	0	0	0
International Journal of Educational Management	1	0	0	0	1	1	0	0	0	0	0	2
International Journal of Leadership in Education	1	0	0	0	0	0	0	0	0	0	1	1
The International Journal of Management Education	1	0	0	0	0	0	0	0	0	0	0	0
International Journal of Qualitative Studies in Education	1	0	0	0	0	0	0	0	0	0	0	0
Journal of Education Policy	5	0	0	0	2	1	0	2	0	0	0	5
Journal of Educational Administration	2	0	0	0	0	1	0	0	0	0	0	1
Management in Education	1	0	0	1	0	0	0	0	0	0	0	1
Oxford Review of Education	1	0	0	0	1	0	0	1	2	0	1	5
Perspectives in Education	0	0	0	0	0	0	0	0	1	0	0	1
Quality Assurance in Education	2	0	0	1	0	0	0	0	5	0	0	6
Review of Educational Research	1	0	0	0	0	0	0	0	0	0	0	0
School Leadership & Management	1	1	0	0	1	0	0	0	0	0	0	2
Studies in Educational Evaluation	1	0	0	0	0	0	0	0	1	0	0	1
Total	36	6	6	5	9	3	3	15	27	2	11	87

Legend:

1 - Institutional Academic Performance

1A- Course/Program Assessment

1B - Academic/Research results

2 - Internal Resources Management

2A - Financial resources

2B - People

2C – General

3 - Public Funding

4 - Quality Mechanisms

5 - Student Assessment Procedures

5A - Marking/Grading

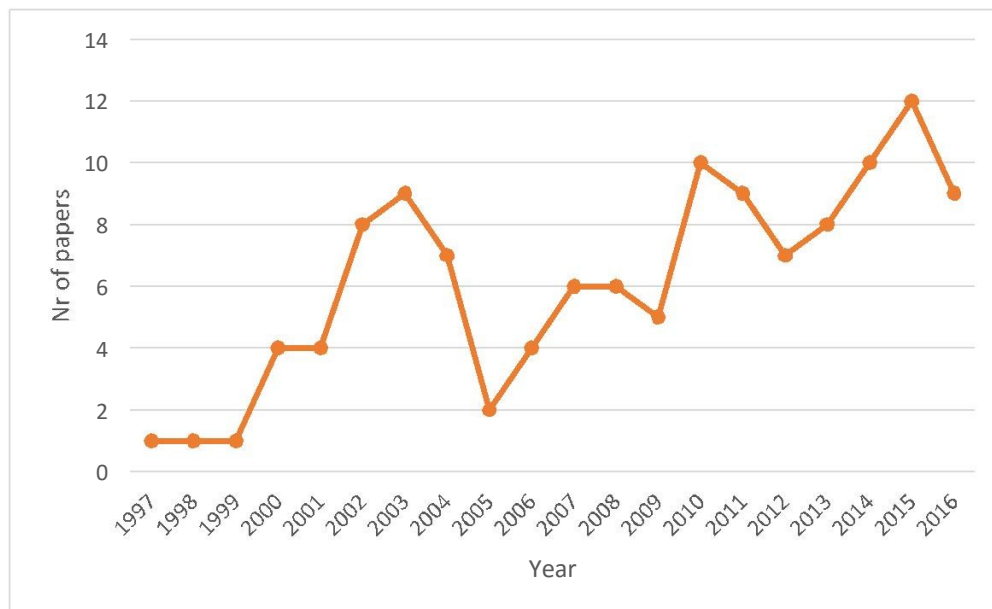
5B – Selection/assessment process of candidates (students)

6 – Other

The chronological analysis of the articles is shown in Figure 2. It is possible to notice that the earliest paper that somehow addresses transparency in education dates from 1997. As it would be expected, the number of articles published prior to 2000 is rather limited. Such number has increased from 2000 to 2003 and has dropped again until 2006. It was after 2009,

following the Open Government directive (Obama, 2009) and Malmö Declaration (European Commission, 2009), that the number of publications exhibits a relatively sound upwards tendency.

Figure 2. “Transparency” trends for published articles 1997-2016 by year (N=123)



3.2. Thematic analysis

This section describes the main findings related to the understanding of transparency embedded in the papers analysed. As explained earlier, a thematic analysis of the papers was performed based on the careful reading of the abstracts content. The process led to the emergence of nine themes, plus the ‘others’ category, which aggregates papers where transparency was associated with very specific (and typically scattered) issues. As shown in section 3.2.1, these nine themes were further analysed and grouped into macro-themes using an affinity diagram. This structuring is then used in section 3.2.2 to characterise each theme in what concerns the number of papers included and the way transparency is understood.

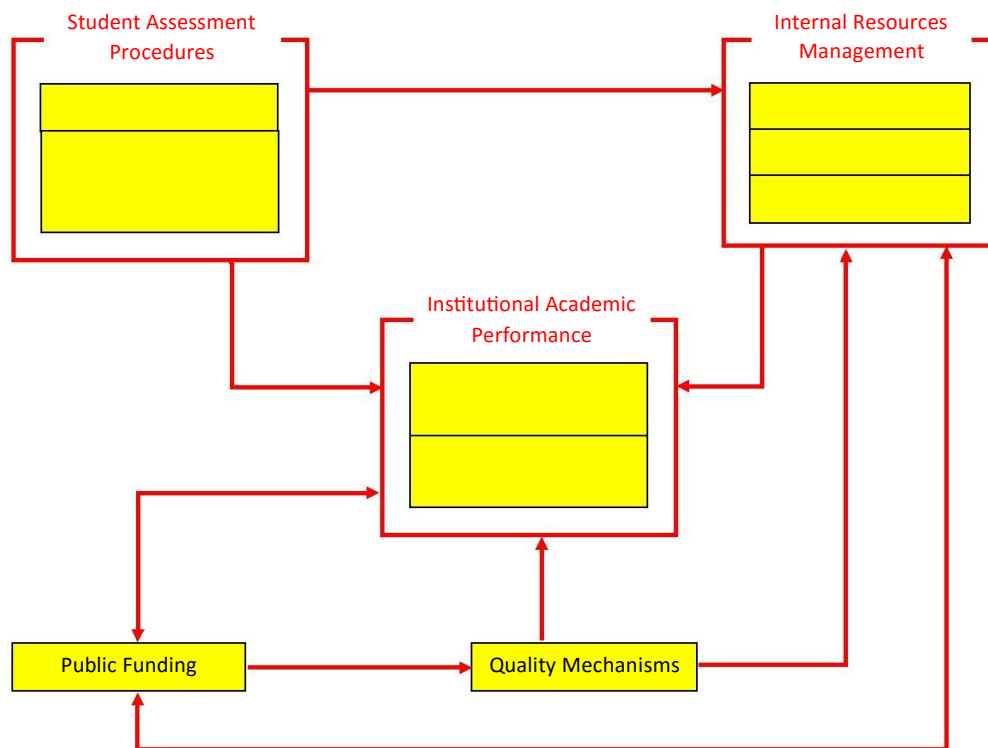
3.2.1. Affinity diagram

With the purpose of exploring potential affinities between the themes identified and analyse relationships among issues, a diagram was built. The transparency themes hierarchy was built from the bottom up, and the relationships were based on the intuition of the team. The label for each cluster of themes was found after an extensive team discussion. Figure 3 shows the outcome of this exercise.

As depicted in Figure 3, transparency in education seems to be associated with three macro-themes: institutional academic performance, internal resources management and student assessment procedures. Quality mechanisms and public funding remained as ‘lone wolves’. Institutional academic performance transparency largely depends on the trustworthiness of the way institutions produce a set of indicators related to their core activities and to the openness of course and program assessment procedures. Internal resources transparency deals with the existence of clear management practices. Such practices should be known by all and their implementation possible to be monitored by those affected by the decisions taken by institutional managers so that a sense of justice and fairness is

enhanced. Finally, students' assessment procedures emerged as another important field of transparency in education, mainly dealing with what happens in the 'classroom', within the pedagogical processes and in the tutor/student relationship.

Figure 3. Affinity Diagram concerning 'transparency' in published articles



The links between transparency issues are multiple, as Figure 3 suggests. In particular, institutional academic performance transparency is affected by what happens in all the other fields. As an example, the trust one can have on the institution academic results depends on the clarity of student assessment procedures, but also on the transparency of quality audits and other data produced by quality mechanisms and on the clearness of the link between public funding and performance. Public funding transparency equally has strong impacts on various areas of school management, especially internal resources management.

3.2.2. Themes description

It follows a comprehensive description of the themes identified.

1) Institutional Academic Performance

The published articles associated with this theme were broadly divided into two main topics: one related with courses and programs assessment (six articles) and the other concerning academic/research results transparency (six articles).

The first group of published articles addresses the different systems and processes adopted for courses and programs evaluation. Concerns were raised about the multiple measures used and how associated data was obtained from the combination of different sources (transparency in derivation). In what concerns non-completion rates, for instance, it was discussed whether data about exit cohorts or entry cohorts should be used to better reflect the health of a course in a transparent manner (e.g. (Lee and Buckthorpe, 2008)). Furthermore, transparency should be an important principle to adopt when considering student involvement

in these course evaluation systems and corresponding improvement processes (e.g. (Freeman and Dobbins, 2013)). At the end of assessment processes, there is also a concern about transparency in reporting syntheses (e.g. (Green and Skukauskaitė, 2008)).

A second group of articles is dedicated to academic/research results transparency. These papers identified the need for policy-makers, when developing schools' and higher education institutions' accountability systems, to ensure transparency of results to the public, particularly when these institutions are given operational, financial, and program autonomy (e.g. (Manno et al., 2000)). Specific attention was also devoted to higher education ranking systems assessment, namely by incorporating transparency related criteria (e.g. (Stolz et al., 2010)).

2) Internal resources management

Internal resources management covers three main topics: financial resources management people management and general management. As depicted in Table 3, this cluster includes 17 papers overall.

In what financial resources management is concerned, the six articles analysed essentially deal with the importance of educational institutions adopting transparent accounting and budgetary processes so that long-term survival and good governance are enhanced. Two of them (Leslie et al., 2012; Marques de Almeida and de Costa Marques, 2003) specifically point out that accounting registration procedures should be transparent with the allocation of revenues and expenses to particular budgetary categories being clear. The dominant driver of transparency in this cluster are accountability demands. Although the majority of the papers do not clearly identify who benefits from transparency efforts, one of them (Koross et al., 2009) explicitly mentions parents as the main beneficiaries of transparency by having more information to evaluate tuition fees amounts.

Under the people management category, nine articles were found. Three of them specifically address teachers' assessment with the main purpose of encouraging schools/universities improvement. For example, a recent paper from Goldring et al. (2015) stresses the importance of transparent observational data so that principals can make better decisions regarding teachers' evaluation. The remaining six deal with other human resource management practices, such as careers management and workload assignment. In the vast majority of these papers the recipients of transparency is clearly stated – faculty/academic staff (interestingly, none of the papers address issues related to other staff members). Transparency in people management aims essentially to promote perceptions of justice and fairness (see, for instance, (Klein, 2012)) and to avoid any kind of discrimination (e.g. (Barrett and Barrett, 2011)).

Finally, the 'general management' cluster aggregates three articles that refer to transparency of institutions' management in general, as it happens with Wilkins's article (2015) that addresses school governing bodies' performance transparency.

3) Public funding

Public funding is a typical domain for accountability concerns. In fact, the three articles that form this group use transparency as a key requirement of rendering individually institutions (or the system as a whole) accountable to stakeholders, in particular to the financiers, either being the government or any other kind of funds providers. Levačić (2008) highlights the problems of "a-rational and non-transparent methods of funding from central to local government" and links transparency with different levels of autonomy. On its turn, Koehn (2013) refers to "a call for increased transparency in web postings regarding successful and unsuccessful transnational higher education partnerships for research and development" pointing the finger to the importance of transparency in other types of funding.

4) Quality mechanisms

Quality mechanisms (which typically include internal quality assurance systems, evaluation procedures and accreditation frameworks) have emerged as an important focus of transparency in education management literature with fifteen papers addressing the issue. Most of the papers included in this category stress that existing quality assurance processes should be transparent (e.g. (Aelterman, 2006; Stensaker et al., 2010)) in order to foster public trust and comparability. A few others (see for instance (Ala-Vähälä and Saarinen, 2009; Andersen et al., 2009)) regard transparency as an expected consequence of accreditation schemes through, for example, the publication of reports.

The specific role of quality assurance agencies is addressed in a couple of papers. As an example, Damian et al. (2015) highlights that the work of agencies should be more transparent. Ensuring objectivity and comparability is behind the quest for more transparent assessment standards and inspector practices (e.g. (Hudson et al., 2015)).

In line with the quality assurance aim of promoting continuous improvement, articles in this cluster link transparency to this goal. According to Damian et al. (2015), more transparency in work procedures makes “easier to improve systematically”.

The potential beneficiaries of greater transparency in quality mechanisms are relatively broad and tend to embrace all stakeholders. As Aelterman (2006) puts it, “the aim of quality assurance codes of practice and guidelines is, in theory, to give a clear indication to stakeholders, governments, financers, partners and the public at large about the various course providers and the level of education they offer”.

5) Student assessment procedures

As depicted in Table 3, this cluster aggregates the largest number of articles found (n=29), covering two main topics: transparency of marking/grading procedures (27 articles), and transparency of candidate selection/assessment processes (two articles).

Most articles concerning the ‘marking/grading’ topic refer to administering and evaluating ‘traditional’ exams related issues, namely whether the rationale (assumptions) and assessment criteria and procedures are transparent (e.g. (Ritter, 2000)). Transparency in this regard is expected to increase confidence in the rigour, reliability, validity and robustness of assessment systems and processes. Ultimately, individual students become less cynical about the marking process and may even understand assessors’ difficulties (e.g. (Bamber, 2015)). Learning, study progress, and academic performance may also benefit from increased assessment transparency as “it considerably lowers fear of failure and academic pressure” (Suhre et al., 2013). As for the broader community, transparency is expected to contribute to strengthen confidence and trust in public examinations (e.g. (Simpson and Baird, 2013)).

Apart from these articles focusing on ‘traditional’ individual student assessment and marking procedures, five other articles stood out. The first by Caple and Bogle (2013) refers to the grading of group assessment tasks using wikis. Since this collaborative tool registers and attributes all edit/modification actions to a specific user (group member), it allows for a more transparent and fair grading of each individual student based on his/her actual contribution. A second article by Gale et al. (2002) considers triadic (self, peer and tutor) assessment to conclude that “it is clearly not a transparent activity”. The remaining articles (e.g. (Taras, 2001)) deal with transparency in relation to self-assessment tasks, and stress the importance of prior tutor feedback, as it allows students to identify and understand their own errors, and conclude that providing written criteria and grade descriptors may not be sufficient to support self-assessment.

Still in the ‘marking/grading’ topic, four articles (e.g. (Tinkler and Jackson, 2000)) refer to transparency of research PhD assessment and doctoral examination practices (including viva examination), “a process that is arguably far less transparent than those at other levels of British higher education” (Tinkler and Jackson, 2000). The main aim is to achieve inter-institutional consistency in PhD awarding (Tinkler and Jackson, 2000).

In what concerns the ‘selection/assessment’ topic, two papers were found to consider transparency as associated with the process of application, determination and delivery of scholarships (Schluter and Johnston, 2015) and nationwide university selection tests (Bethell and Zabulionis, 2012). All in all, both articles were concerned with the process robustness, accountability and equitability, as well as corruption prevention and overall consistency of selection results (two major issues that arise when autonomous and unregulated selection tests are set by autonomous universities).

4. Conclusion

Transparency and Open Government have become important keywords in many fields, especially those where public resources are substantial and the services provided are classified as ‘of general interest’, such is the case of education.

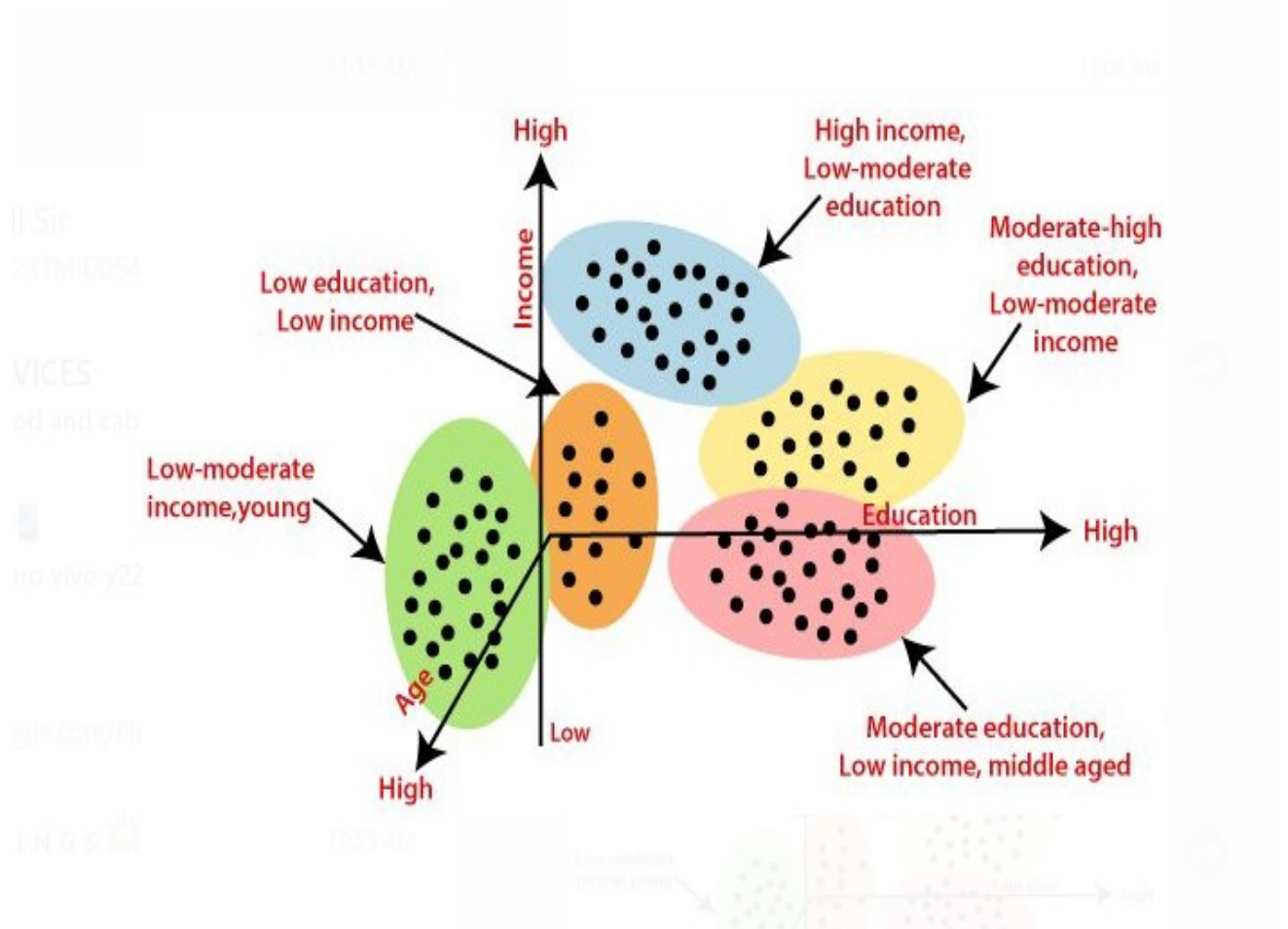
The aim of the current study was that of analysing at what extent education management literature in the academic field is reflecting these concerns and what transparency issues are being addressed. To fulfil this aim a systematic literature study was conducted and a thematic analysis performed based on the published articles’ abstracts.

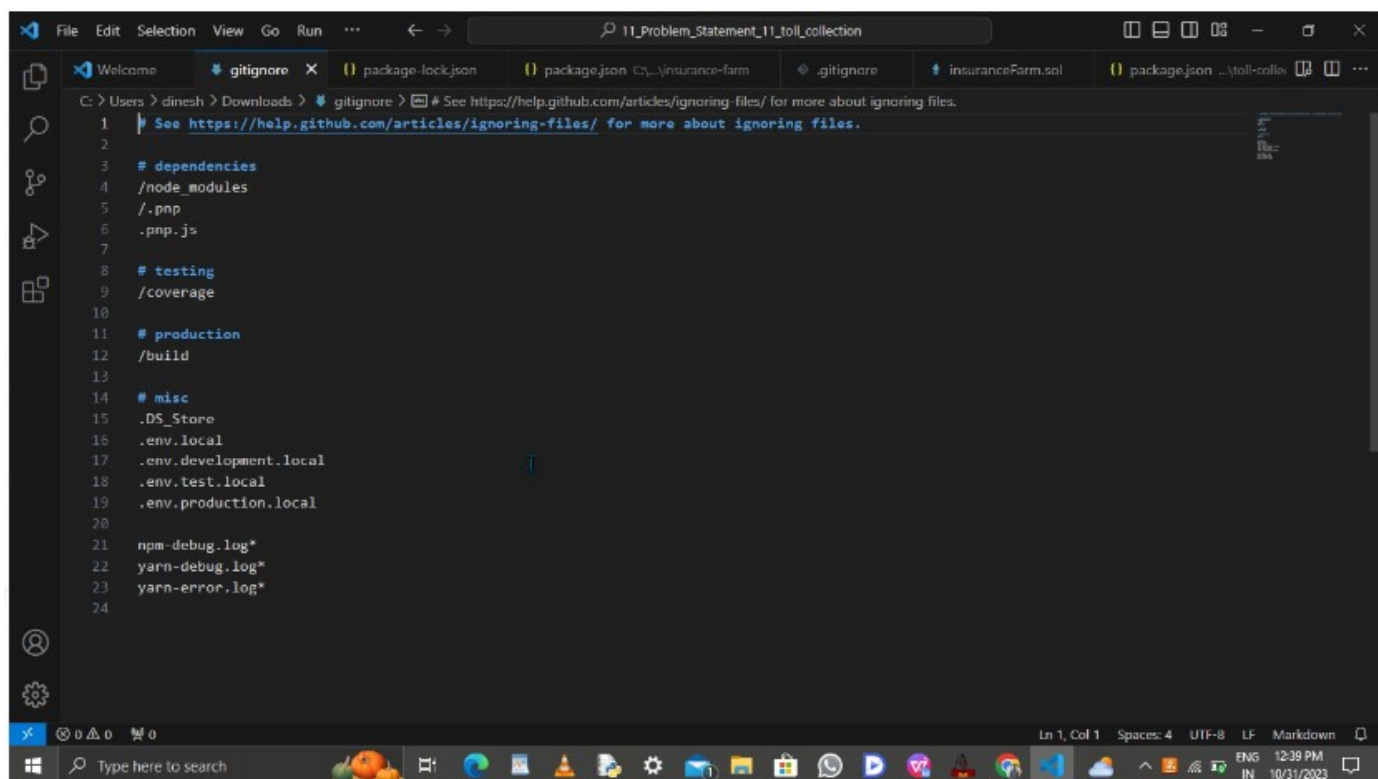
Based on the search procedures chosen, it was possible to define a pool of 123 articles that somehow fitted into the subject. These articles were published in 29 different journals, with dates of publication ranging from 1997 to 2016. There is a slight (but steady) tendency of increase over the years.

Thematic analysis led to the identification of nine themes, which were afterwards grouped into three major issues. From the analysis conducted, it is clear that transparency is regarded as an important requirement for improving the educational system (and its academic results in particular) and for overcoming the problem of public mistrust that affects many countries. Making educational institutions more accountable to their stakeholders and to the society at large, namely showing how they are making use of public funding, is an important topic. Yet, besides these broad understandings, transparency has also meanings more related to the clarity, rigour, reliability and accessibility of core educational processes, marking being a good example in this regard. Moreover, because educational institutions are organisations that, as it always happens, have to manage resources (financial, technological, infrastructures and, above all, people), having transparent internal processes was pointed out as an important topic in the literature. Not surprisingly, in the educational context, given the nature of regulatory systems, quality mechanisms are also an important focus of transparency. One must keep in mind that quality reviews provide publicly accessible information about institutional effectiveness. Transparency is therefore often stressed as an expected consequence of the implementation of quality assurance mechanisms. Quality mechanisms have also impact on other objects of transparency identified, such is the case of study/course programmes assessment.

As far as it was possible to assess, this was the first systematic literature study about transparency in education management related research. Its main limitations are related to some selection and analysis procedures that were applied: only articles that had the word ‘transparency’ in the abstract were considered and just the abstract was taken for analysis. Consequently, some relevant articles might have been overlooked and the analysis could have been deeper if the authors had analysed the full articles. However, the current study has contributed to the identification of key themes regarding transparency that are relevant for educational institutions and for which further investigation is needed.

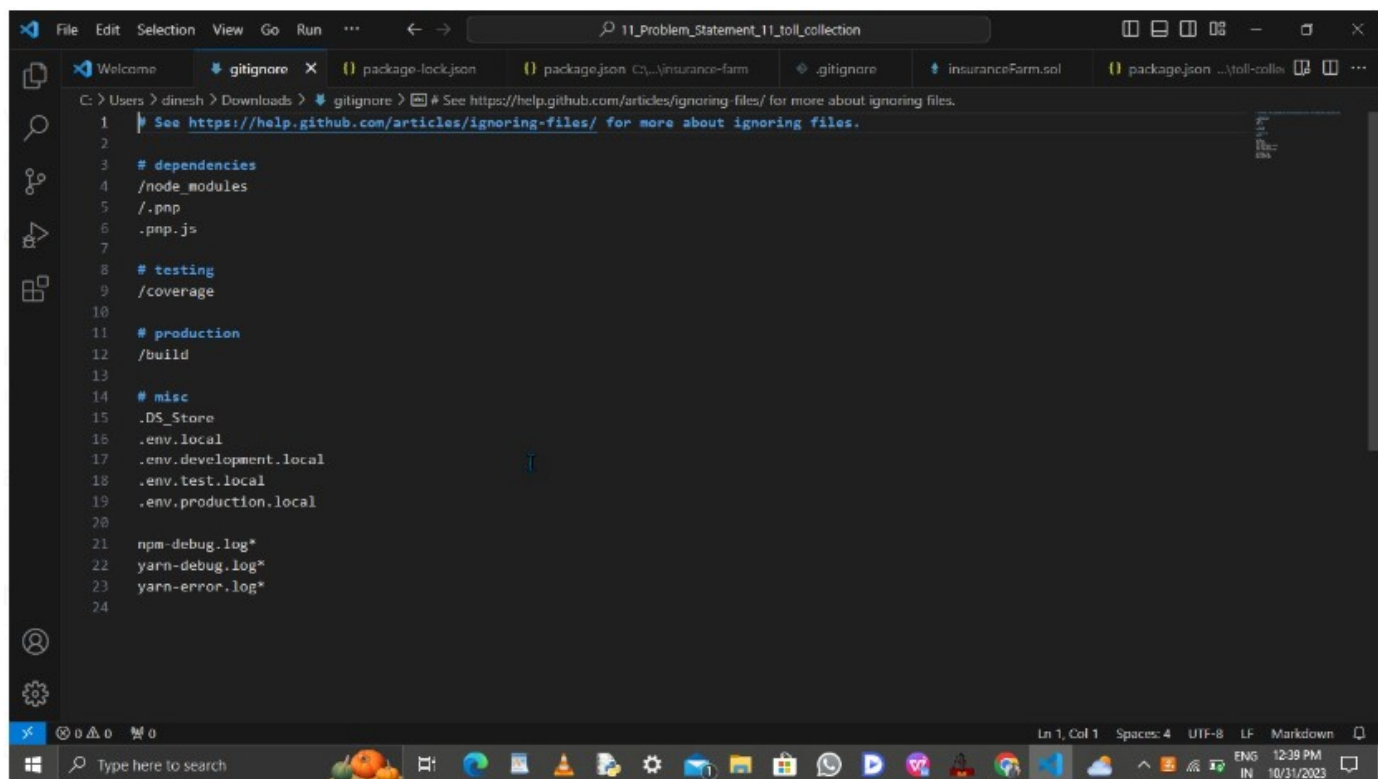






This screenshot shows the Visual Studio Code editor with a .gitignore file open. The file contains a list of patterns to ignore, including dependencies, testing files, production files, and various log files. The editor interface includes a sidebar with icons for Explorer, Search, Source Control, and Run and Debug. The top bar shows the file name and search results. The bottom status bar indicates the current line and column (Ln 1, Col 1), the number of spaces (4), the encoding (UTF-8), the line ending (LF), and the file type (Markdown).

```
1 | See https://help.github.com/articles/ignoring-files/ for more about ignoring files.
2 |
3 | # dependencies
4 | /node_modules
5 | /.pnp
6 | .pnp.js
7 |
8 | # testing
9 | /coverage
10 |
11 | # production
12 | /build
13 |
14 | # misc
15 | .DS_Store
16 | .env.local
17 | .env.development.local
18 | .env.test.local
19 | .env.production.local
20 |
21 | npm-debug.log*
22 | yarn-debug.log*
23 | yarn-error.log*
24 |
```



This screenshot shows the Visual Studio Code editor with a .gitignore file open. The file contains a list of patterns to ignore, including dependencies, testing files, production files, and various log files. The editor interface includes a sidebar with icons for Explorer, Search, Source Control, and Run and Debug. The top bar shows the file name and search results. The bottom status bar indicates the current line and column (Ln 1, Col 1), the number of spaces (4), the encoding (UTF-8), the line ending (LF), and the file type (Markdown).

```
1 | See https://help.github.com/articles/ignoring-files/ for more about ignoring files.
2 |
3 | # dependencies
4 | /node_modules
5 | /.pnp
6 | .pnp.js
7 |
8 | # testing
9 | /coverage
10 |
11 | # production
12 | /build
13 |
14 | # misc
15 | .DS_Store
16 | .env.local
17 | .env.development.local
18 | .env.test.local
19 | .env.production.local
20 |
21 | npm-debug.log*
22 | yarn-debug.log*
23 | yarn-error.log*
24 |
```



```
File Edit Selection View Go Run ... 11_Problem_Statement_11_toll_collection
Welcome package.json C:\_Downloads\ X College Certificates.sol gitignore package-lock.json package.json C:\_insurance-farm .gitigr ...

C:\Users\dinesh>Downloads>package.json>...
1
2 "name": "college-certificate",
3 "version": "0.1.0",
4 "private": true,
5 "dependencies": {
6   "@testing-library/jest-dom": "^5.17.0",
7   "@testing-library/react": "^13.4.0",
8   "@testing-library/user-event": "^13.5.0",
9   "react": "^18.2.0",
10  "react-dom": "^18.2.0",
11  "react-scripts": "5.0.1",
12  "web-vitals": "2.1.4",
13  "ethers": "5.6.6",
14  "react-bootstrap": "2.8.0"
15 },
16 "scripts": {
17   "start": "react-scripts start",
18   "build": "react-scripts build",
19   "test": "react-scripts test",
20   "eject": "react-scripts eject"
21 },
22 "eslintConfig": {
23   "extends": [
24     "react-app",
25     "react-app/jest"
26   ]
27 },
28 "browserslist": {
  ...
}

Ln 1, Col 1 Spaces: 2 UTF-8 LF {} JSON
```

```
Welcome College Certificates.sol gitignore package-lock.json package.json C:\_insurance-farm .gitignore insuranceFarm.sol ...

C:\Users\dinesh>Downloads>College Certificates.sol
1 // SPDX-License-Identifier: MIT
2 pragma solidity ^0.8.0;
3
4 contract collegeCertificate {
5   address public owner;
6
7   struct Certificate {
8     string studentName;
9     string courseName;
10    uint256 DateOfGraduation;
11    uint256 issueDate;
12    address issuer;
13  }
14
15  uint256 public totalCertificates;
16  mapping(uint256 => Certificate) public certificates;
17
18  event CertificateIssued(
19    uint256 indexed certificateId,
20    string studentName,
21    string courseName,
22    uint256 issueDate,
23    address indexed issuer
24  );
25
26  constructor() {
27    owner = msg.sender;
28  }
29
  ...
}

Ln 1, Col 1 Spaces: 4 UTF-8 LF Plain Text
```


The screenshot shows a VS Code editor window with the file explorer on the left and the editor area in the center. The active file is 'CollegeCertificates.sol' located at 'C:\Users\dinesh\Downloads\College Certificates.sol'. The code is a Solidity smart contract for managing college certificates. It includes a license identifier, pragma statement, contract definition with an owner, a Certificate struct, a totalCertificates counter, a mapping of certificates, an event for certificate issuance, and a constructor that sets the owner to the msg.sender.

```
1 // SPDX-License-Identifier: MIT
2 pragma solidity ^0.8.0;
3
4 contract collegeCertificate {
5     address public owner;
6
7     struct Certificate {
8         string studentName;
9         string courseName;
10        uint256 DateOfGraduation;
11        uint256 issueDate;
12        address issuer;
13    }
14
15    uint256 public totalCertificates;
16    mapping(uint256 => Certificate) public certificates;
17
18    event CertificateIssued(
19        uint256 indexed certificateId,
20        string studentName,
21        string courseName,
22        uint256 issueDate,
23        address indexed issuer
24    );
25
26    constructor() {
27        owner = msg.sender;
28    }
29 }
```

The status bar at the bottom indicates 'Ln 1, Col 1', 'Spaces: 4', 'UTF-8', 'LF', and 'Plain Text'.

The screenshot shows a VS Code editor window with the file explorer on the left and the editor area in the center. The active file is 'README.md' located at 'C:\Users\dinesh\Downloads\README.md'. The content is the standard 'Getting Started with Create React App' README, providing instructions on how to run the application in development mode, test it, and build it for production.

```
1 # Getting Started with Create React App
2
3 This project was bootstrapped with [Create React App](https://github.com/facebook/create-react-app).
4
5 ## Available Scripts
6
7 In the project directory, you can run:
8
9 ### `npm start`
10
11 Runs the app in the development mode.\
12 Open [http://localhost:3000](http://localhost:3000) to view it in your browser.
13
14 The page will reload when you make changes.\
15 You may also see any lint errors in the console.
16
17 ### `npm test`
18
19 Launches the test runner in the interactive watch mode.\
20 See the section about [running tests](https://facebook.github.io/create-react-app/docs/running-tests) for more information.
21
22 ### `npm run build`
23
24 Builds the app for production to the `build` folder.\
25 It correctly bundles React in production mode and optimizes the build for the best performance.
26
27 The build is minified and the filenames include the hashes.\
28 Your app is ready to be deployed!
29
```

The status bar at the bottom indicates 'Ln 1, Col 1', 'Spaces: 4', 'UTF-8', 'LF', and 'Markdown'.

The screenshot shows a VS Code editor window with the file explorer on the left and the editor area on the right. The file explorer shows a project structure with files like README.md, package.json, College Certificates.sol, gitignore, package-lock.json, and package.json. The editor area shows the content of README.md, which includes links to Create React App documentation. The text in the editor is as follows:

```
41 ready for it.
42
43 ## Learn More
44 You can learn more in the [Create React App documentation](https://facebook.github.io/create-react-app/docs/getting-started).
45 To learn React, check out the [React documentation](https://reactjs.org/).
46
47
48 ### Code Splitting
49
50 This section has moved here: [https://facebook.github.io/create-react-app/docs/code-splitting](https://facebook.github.io/create-react-app/docs/code-splitting)
51
52 ### Analyzing the Bundle Size
53
54 This section has moved here: [https://facebook.github.io/create-react-app/docs/analyzing-the-bundle-size](https://facebook.github.io/create-react-app/docs/analyzing-the-bundle-size)
55
56 ### Making a Progressive Web App
57
58 This section has moved here: [https://facebook.github.io/create-react-app/docs/making-a-progressive-web-app](https://facebook.github.io/create-react-app/docs/making-a-progressive-web-app)
59
60 ### Advanced Configuration
61
62 This section has moved here: [https://facebook.github.io/create-react-app/docs/advanced-configuration](https://facebook.github.io/create-react-app/docs/advanced-configuration)
63
64 ### Deployment
```

The status bar at the bottom shows the cursor is at line 63, column 1, with a space of 4, UTF-8 encoding, and LF line endings. The system tray at the bottom right shows the date and time as 10/31/2023, 12:41 PM.

The screenshot shows a VS Code editor window with the file explorer on the left and the editor area on the right. The file explorer shows a project structure with files like README.md, package.json, College Certificates.sol, gitignore, package-lock.json, and package.json. The editor area shows the content of README.md, which includes links to Create React App documentation. The text in the editor is as follows:

```
50 This section has moved here: [https://facebook.github.io/create-react-app/docs/code-splitting](https://facebook.github.io/create-react-app/docs/code-splitting)
51
52 ### Analyzing the Bundle Size
53
54 This section has moved here: [https://facebook.github.io/create-react-app/docs/analyzing-the-bundle-size](https://facebook.github.io/create-react-app/docs/analyzing-the-bundle-size)
55
56 ### Making a Progressive Web App
57
58 This section has moved here: [https://facebook.github.io/create-react-app/docs/making-a-progressive-web-app](https://facebook.github.io/create-react-app/docs/making-a-progressive-web-app)
59
60 ### Advanced Configuration
61
62 This section has moved here: [https://facebook.github.io/create-react-app/docs/advanced-configuration](https://facebook.github.io/create-react-app/docs/advanced-configuration)
63
64 ### Deployment
65
66 This section has moved here: [https://facebook.github.io/create-react-app/docs/deployment](https://facebook.github.io/create-react-app/docs/deployment)
67
68 ### 'npm run build' fails to minify
69
70 This section has moved here: [https://facebook.github.io/create-react-app/docs/troubleshooting#npm-run-build-fails-to-minify](https://facebook.github.io/create-react-app/docs/troubleshooting#npm-run-build-fails-to-minify)
71
```

The status bar at the bottom shows the cursor is at line 71, column 1, with a space of 4, UTF-8 encoding, and LF line endings. The system tray at the bottom right shows the date and time as 10/31/2023, 12:41 PM.

```
File Edit Selection View Go Run ... 11_Problem_Statement_11_toll_collection
Welcome README.md package.json C:\...Downloads College Certificates.sol X gitignore package-lock.json package.json C:\...Vinsuran ...
C:\Users> dinesh> Downloads> College Certificates.sol
25
26     constructor() {
27         owner = msg.sender;
28     }
29
30     modifier onlyOwner() {
31         require(msg.sender == owner, "Only contract owner can call this");
32         _;
33     }
34
35     function issueCertificate(
36         string memory studentName,
37         string memory courseName,
38         uint256 _dateOfGraduation,
39         uint256 issueDate
40     ) external onlyOwner {
41         uint256 certificateId = totalCertificates + 1;
42
43         certificates[certificateId] = Certificate({
44             studentName: studentName,
45             courseName: courseName,
46             DateOfGraduation : _dateOfGraduation,
47             issueDate: issueDate,
48             issuer: msg.sender
49         });
50
51         totalCertificates = certificateId;
52
53         emit CertificateIssued(
```

```
File Edit Selection View Go Run ... 11_Problem_Statement_11_toll_collection
Welcome README.md package.json C:\...Downloads College Certificates.sol X gitignore package-lock.json package.json C:\...Vinsuran ...
C:\Users> dinesh> Downloads> College Certificates.sol
42
43         certificates[certificateId] = Certificate({
44             studentName: studentName,
45             courseName: courseName,
46             DateOfGraduation : _dateOfGraduation,
47             issueDate: issueDate,
48             issuer: msg.sender
49         });
50
51         totalCertificates = certificateId;
52
53         emit CertificateIssued(
54             certificateId,
55             studentName,
56             courseName,
57             issueDate,
58             msg.sender
59         );
60     }
61
62     function getCertificate(
63         uint256 certificateId
64     ) external view returns (string memory, string memory, uint256, uint256, address) {
65         Certificate memory cert = certificates[certificateId];
66         return (cert.studentName, cert.courseName, cert.DateOfGraduation, cert.issueDate, cert.issuer);
67     }
68 }
69
```